SEQUENCE LISTING

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Hayes, Ian
Murphy, Finbarr

<120> Apoptosis-Related Kinase/GPCRs

<130> 8912/2015

<140> US 10/781,581
<141> 2004-02-18

<150> US 10/764,238
<151> 2004-01-23

<150> US 60/457,533
<151> 2003-03-25

<150> UK 0301566.6
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<170> PatentIn version 3.2

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<220>
<223> sense oligonucleotide (TLK2A)

<400> 124
guguuccacc aguugcacgt t 21

<210> 125
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<212> DNA
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<220>
<223> antisense oligonucleotide (TLK2A)

<400> 125
cgugcaacug guggaacact t 21

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<220>
<223> antisense oligonucleotide (TLK2B)

<400> 126

gauggcgugu agagauaagt t 21

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<220>
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cuuaucucua cacgccauct t 21

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<220>
<223> sense oligonucleotide (EKI1)

<400> 128
gcacuggauc caaagcaugt t 21

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<220>
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caugcuuugg auccagugct t 21

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<220>
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uacauggccc cugagguagt t 21

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<400> 131
cuaccucagg ggccauguat t 21

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<220>
<223> sense oligonucleotide (MKNKseq2)

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auugcaagga gguuccauct t 21

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<400> 133
gauggaaccu ccuugcaaut t 21

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<220>
<223> sense oligonucleotide (NTKL)

<400> 134
uguggagcug augaagcact t 21

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<220>
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<220>
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gcucagcuug augaugcugt t 21

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gaccuuccgc uuacucugut t 21

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caucacgcug agugaccugt t 21

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caggucacuc agcgugaugt t 21

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guagugcaca gucuuucugt t 21

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<220>
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<400> 147
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<220>
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<400> 148
gcuacggaag cugauccuct t 21

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<220>
<223> antisense oligonucleotide (P14KB)

<400> 149
gaggaucagc uuccguagct t 21

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<223> sense oligonucleotide (FLT4)

<400> 150
guacggcaac cucuccaact t 21

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<400> 151
guuggagagg uugccguact t 21

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gaaccugcac cgcuccauat t 21

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<400> 153
uauggagcgg ugcagguuct t 21

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<400> 155
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<400> 156
guccugggcu gauaaccuct t 21

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<220>
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<400> 157
gagguuauca gcccaggact t 21

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<220>
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uacaugccug guggagauct t 21

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<223> antisense oligonucleotide (ROCK)

<400> 159
gaucuccacc aggcauguat t 21

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<400> 160
gcucugcagu auggcugcct t 21

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<223> antisense oligonucleotide (BAI2)

<400> 161
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<400> 162
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<210> 163
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<223> antisense oligonucleotide (ULK1)

<400> 163
cauaaccagg uagacagaat t 21

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<400> 164

gaucgugcag augaguaact t 21

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<400> 165
guuacucauc ugcacgauct t 21

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<223> sense oligonucleotide (STK6)

<400> 166
gccgguucag aaucagaagt t 21

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<400> 167
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<400> 168
caccaauuag uucaaagcut t 21

<210> 169
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<400> 169
agcuuugaac uaauuggugt t 21

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<400> 171
gcaaaugaga cagagcgcut t 21

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<400> 172
agcgcaagac acucuguggt t 21

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<400> 173
ccacagagug ucuugcgcut t 21

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<213> Homo sapiens

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ccatctggtt ttgttcgtgc ttcccctcga acgctttcta caagatccac tgcaaatcag 4020

tctttccgga aagtggtcaa aaatacatct ggaaaaacta gttaa 4065

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<400> 175

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20 25 30

Gly Leu Asp Ala Leu Val Tyr Asp Leu Asp Phe Pro Ala Leu Arg Lys
35 40 45

Asn Lys Asn Ile Asp Asn Phe Leu Ser Arg Tyr Lys Asp Thr Ile Asn
50 55 60

Lys Ile Arg Asp Leu Arg Met Lys Ala Glu Asp Tyr Glu Val Val Lys
65 70 75 80

Val Ile Gly Arg Gly Ala Phe Gly Glu Val Gln Leu Val Arg His Lys
85 90 95

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Ser Thr Arg Lys Val Tyr Ala Met Lys Leu Leu Ser Lys Phe Glu Met
            100                 105                 110

Ile Lys Arg Ser Asp Ser Ala Phe Phe Trp Glu Glu Arg Asp Ile Met
        115                 120                 125

Ala Phe Ala Asn Ser Pro Trp Val Val Gln Leu Phe Tyr Ala Phe Gln
    130                 135                 140

Asp Asp Arg Tyr Leu Tyr Met Val Met Glu Tyr Met Pro Gly Gly Asp
145                 150                 155                 160

Leu Val Asn Leu Met Ser Asn Tyr Asp Val Pro Glu Lys Trp Ala Arg
                165                 170                 175

Phe Tyr Thr Ala Glu Val Val Leu Ala Leu Asp Ala Ile His Ser Met
            180                 185                 190

Gly Phe Ile His Arg Asp Val Lys Pro Asp Asn Met Leu Leu Asp Lys
        195                 200                 205

Ser Gly His Leu Lys Leu Ala Asp Phe Gly Thr Cys Met Lys Met Asn
    210                 215                 220

Lys Glu Gly Met Val Arg Cys Asp Thr Ala Val Gly Thr Pro Asp Tyr
225                 230                 235                 240

Ile Ser Pro Glu Val Leu Lys Ser Gln Gly Gly Asp Gly Tyr Tyr Gly
                245                 250                 255

Arg Glu Cys Asp Trp Trp Ser Val Gly Val Phe Leu Tyr Glu Met Leu
            260                 265                 270

Val Gly Asp Thr Pro Phe Tyr Ala Asp Ser Leu Val Gly Thr Tyr Ser
        275                 280                 285

Lys Ile Met Asn His Lys Asn Ser Leu Thr Phe Pro Asp Asp Asn Asp
    290                 295                 300

Ile Ser Lys Glu Ala Lys Asn Leu Ile Cys Ala Phe Leu Thr Asp Arg
305                 310                 315                 320

Glu Val Arg Leu Gly Arg Asn Gly Val Glu Glu Ile Lys Arg His Leu
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325 330 335

Phe Phe Lys Asn Asp Gln Trp Ala Trp Glu Thr Leu Arg Asp Thr Val
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Ala Pro Val Val Pro Asp Leu Ser Ser Asp Ile Asp Thr Ser Asn Phe
355 360 365

Asp Asp Leu Glu Glu Asp Lys Gly Glu Glu Glu Thr Phe Pro Ile Pro
370 375 380

Lys Ala Phe Val Gly Asn Gln Leu Pro Phe Val Gly Phe Thr Tyr Tyr
385 390 395 400

Ser Asn Arg Arg Tyr Leu Ser Ser Ala Asn Pro Asn Asp Asn Arg Thr
405 410 415

Ser Ser Asn Ala Asp Lys Ser Leu Gln Glu Ser Leu Gln Lys Thr Ile
420 425 430

Tyr Lys Leu Glu Glu Gln Leu His Asn Glu Met Gln Leu Lys Asp Glu
435 440 445

Met Glu Gln Lys Cys Arg Thr Ser Asn Ile Lys Leu Asp Lys Ile Met
450 455 460

Lys Glu Leu Asp Glu Glu Gly Asn Gln Arg Arg Asn Leu Glu Ser Thr
465 470 475 480

Val Ser Gln Ile Glu Lys Glu Lys Met Leu Leu Gln His Arg Ile Asn
485 490 495

Glu Tyr Gln Arg Lys Ala Glu Gln Glu Asn Glu Lys Arg Arg Asn Val
500 505 510

Glu Asn Glu Val Ser Thr Leu Lys Asp Gln Leu Glu Asp Leu Lys Lys
515 520 525

Val Ser Gln Asn Ser Gln Leu Ala Asn Glu Lys Leu Ser Gln Leu Gln
530 535 540

Lys Gln Leu Glu Glu Ala Asn Asp Leu Leu Arg Thr Glu Ser Asp Thr
545 550 555 560

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Ala Val Arg Leu Arg Lys Ser His Thr Glu Met Ser Lys Ser Ile Ser
                565                 570                 575

Gln Leu Glu Ser Leu Asn Arg Glu Leu Gln Glu Arg Asn Arg Ile Leu
            580                 585                 590

Glu Asn Ser Lys Ser Gln Thr Asp Lys Asp Tyr Tyr Gln Leu Gln Ala
        595                 600                 605

Ile Leu Glu Ala Glu Arg Arg Asp Arg Gly His Asp Ser Glu Met Ile
    610                 615                 620

Gly Asp Leu Gln Ala Arg Ile Thr Ser Leu Gln Glu Glu Val Lys His
625                 630                 635                 640

Leu Lys His Asn Leu Glu Lys Val Glu Gly Glu Arg Lys Glu Ala Gln
                645                 650                 655

Asp Met Leu Asn His Ser Glu Lys Glu Lys Asn Asn Leu Glu Ile Asp
            660                 665                 670

Leu Asn Tyr Lys Leu Lys Ser Leu Gln Gln Arg Leu Glu Gln Glu Val
        675                 680                 685

Asn Glu His Lys Val Thr Lys Ala Arg Leu Thr Asp Lys His Gln Ser
    690                 695                 700

Ile Glu Glu Ala Lys Ser Val Ala Met Cys Glu Met Glu Lys Lys Leu
705                 710                 715                 720

Lys Glu Glu Arg Glu Ala Arg Glu Lys Ala Glu Asn Arg Val Val Gln
                725                 730                 735

Ile Glu Lys Gln Cys Ser Met Leu Asp Val Asp Leu Lys Gln Ser Gln
            740                 745                 750

Gln Lys Leu Glu His Leu Thr Gly Asn Lys Glu Arg Met Glu Asp Glu
        755                 760                 765

Val Lys Asn Leu Thr Leu Gln Leu Glu Gln Glu Ser Asn Lys Arg Leu
    770                 775                 780
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Leu Leu Gln Asn Glu Leu Lys Thr Gln Ala Phe Glu Ala Asp Asn Leu
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Lys Gly Leu Glu Lys Gln Met Lys Gln Glu Ile Asn Thr Leu Leu Glu
                805                 810                 815

Ala Lys Arg Leu Leu Glu Phe Glu Leu Ala Gln Leu Thr Lys Gln Tyr
            820                 825                 830

Arg Gly Asn Glu Gly Gln Met Arg Glu Leu Gln Asp Gln Leu Glu Ala
        835                 840                 845

Glu Gln Tyr Phe Ser Thr Leu Tyr Lys Thr Gln Val Lys Glu Leu Lys
    850                 855                 860

Glu Glu Ile Glu Glu Lys Asn Arg Glu Asn Leu Lys Lys Ile Gln Glu
865                 870                 875                 880

Leu Gln Asn Glu Lys Glu Thr Leu Ala Thr Gln Leu Asp Leu Ala Glu
                885                 890                 895

Thr Lys Ala Glu Ser Glu Gln Leu Ala Arg Gly Leu Leu Glu Glu Gln
            900                 905                 910

Tyr Phe Glu Leu Thr Gln Glu Ser Lys Lys Ala Ala Ser Arg Asn Arg
        915                 920                 925

Gln Glu Ile Thr Asp Lys Asp His Thr Val Ser Arg Leu Glu Glu Ala
    930                 935                 940

Asn Ser Met Leu Thr Lys Asp Ile Glu Ile Leu Arg Arg Glu Asn Glu
945                 950                 955                 960

Glu Leu Thr Glu Lys Met Lys Lys Ala Glu Glu Glu Tyr Lys Leu Glu
                965                 970                 975

Lys Glu Glu Glu Ile Ser Asn Leu Lys Ala Ala Phe Glu Lys Asn Ile
            980                 985                 990

Asn Thr Glu Arg Thr Leu Lys Thr  Gln Ala Val Asn Lys  Leu Ala Glu
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Leu Glu  Leu Asn Gln Glu Arg  Glu Lys Phe Asn Gln  Met Val Val
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Lys His  Gln Lys Glu Leu Asn  Asp Met Gln Ala Gln  Leu Val Glu
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Glu Cys  Ala His Arg Asn Glu  Leu Gln Met Gln Leu  Ala Ser Lys
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Glu Ser  Asp Ile Glu Gln Leu  Arg Ala Lys Leu Leu  Asp Leu Ser
    1085                 1090                 1095

Asp Ser  Thr Ser Val Ala Ser  Phe Pro Ser Ala Asp  Glu Thr Asp
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Gly Asn  Leu Pro Glu Ser Arg  Ile Glu Gly Trp Leu  Ser Val Pro
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Asn Arg  Gly Asn Ile Lys Arg  Tyr Gly Trp Lys Lys  Gln Tyr Val
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Val Val  Ser Ser Lys Lys Ile  Leu Phe Tyr Asn Asp  Glu Gln Asp
    1145                 1150                 1155

Lys Glu  Gln Ser Asn Pro Ser  Met Val Leu Asp Ile  Asp Lys Leu
    1160                 1165                 1170

Phe His  Val Arg Pro Val Thr  Gln Gly Asp Val Tyr  Arg Ala Glu
    1175                 1180                 1185

Thr Glu  Glu Ile Pro Lys Ile  Phe Gln Ile Leu Tyr  Ala Asn Glu
    1190                 1195                 1200

Gly Glu  Cys Arg Lys Asp Val  Glu Met Glu Pro Val  Gln Gln Ala
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Glu Lys  Thr Asn Phe Gln Asn  His Lys Gly His Glu  Phe Ile Pro
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Thr Leu  Tyr His Phe Pro Ala  Asn Cys Asp Ala Cys  Ala Lys Pro
    1235                1240                1245

Leu Trp  His Val Phe Lys Pro  Pro Pro Ala Leu Glu  Cys Arg Arg
    1250                1255                1260

Cys His  Val Lys Cys His Arg  Asp His Leu Asp Lys  Lys Glu Asp
    1265                1270                1275

Leu Ile  Cys Pro Cys Lys Val  Ser Tyr Asp Val Thr  Ser Ala Arg
    1280                1285                1290

Asp Met  Leu Leu Leu Ala Cys  Ser Gln Asp Glu Gln  Lys Lys Trp
    1295                1300                1305

Val Thr  His Leu Val Lys Lys  Ile Pro Lys Asn Pro  Pro Ser Gly
    1310                1315                1320

Phe Val  Arg Ala Ser Pro Arg  Thr Leu Ser Thr Arg  Ser Thr Ala
    1325                1330                1335

Asn Gln  Ser Phe Arg Lys Val  Val Lys Asn Thr Ser  Gly Lys Thr
    1340                1345                1350

Ser
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<210> 176
<211> 3823
<212> DNA
<213> Homo sapiens

<400> 176

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cagtgtgagg acaaaagcaa ataaaaatta agaagcgttc aaatttatat tcaacaagga    180

agtcatttca atcaacaact tctgctgcat tatttttcca agatgaaccg atacacaacc    240

atgagacagt tgggggacgg cacgtatggg agtgtgctta tgggcaagag taatgaatcc    300

ggggagctgg tggccatcaa aaggatgaag agaaagttct attcttggga tgaatgcatg    360
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aacttgagag aagttaagtc tctgaagaaa cttaatcatg ccaatgttat taaattgaaa 420

gaagttatca gagaaaatga ccatctttat tttatatttg aatatatgaa agaaaacctc 480

tatcaattaa tgaaagacag aaacaagttg ttccctgaat cagtcatcag aaatattatg 540

tatcaaatat tgcaagggct ggcttttatc cataaacatg gctttttttca tagggacatg 600

aaaccagaaa acttgctttg tatgggtcca gagcttgtga aaattgctga ttttggactt 660

gcaagagaat taaggtcaca gccaccatac actgattatg tatctaccag atggtatcgt 720

gcccctgaag ttttactgag atcttcagtt tatagttctc ccattgatgt gtgggctgtt 780

ggaagtatca tggctgaact ctatatgtta aggccacttt tcccagggac aagtgaggtc 840

gatgaaatct ttaaaatttg ccaagtttta gggactccca aaaaaagtga ctggccagaa 900

ggataccagc tggcatcctc tatgaacttc cgttttcccc agtgtgttcc tataaactta 960

aaaactctta ttcccaatgc cagtaatgaa gctattcagc tcatgaccga aatgttgaat 1020

tgggatccaa agaaacgacc gacagcaagc caggcattga aacacccata ttttcaagtt 1080

ggtcaggtat taggcccttc gtcaaatcat ctggaatcaa aacagtcttt aaataagcag 1140

ctgcaaccat tagaatcaaa gccatcttta gttgaggtag agcctaagcc tctgccggat 1200

ataatcgatc aggttgttgg acaaccccag ccaaaaacta gccagcagcc actgcagccc 1260

attcagccgc cacagaacct gagcgtccag caacctccaa agcaacagag tcaggagaaa 1320

ccgccacaaa cgctattccc gagcatcgtc aaaaacatgc caactaagcc aaatggcaca 1380

ctgagtcata aaagtggtag gaggcgttgg ggtcagacta tcttcaagtc tggagatagc 1440

tgggaagagt tggaggacta tgatttcgga gcctcccatt ccaagaagcc aagcatgggt 1500

gtttttaaag aaaaaaggaa aaaagattct ccatttcggc ttccagagcc agtaccctca 1560

ggctccaacc actcgacagg ggaaaacaag agcttacctg ctgttacttc cctaaaatct 1620

gattccgaat tgtcaactgc tccaacctct aaacagtact acttgaaaca atcaagatat 1680

cttccaggtg tgaatcccaa gaaggtgtcc ttgatagcca gtggaaagga aataaacccc 1740

cacacttgga gcaaccagtt attccccaag tcactgggac ccgttggggc agaacttgct 1800

ttcaaaagga gcaatgcagg aaatcttgga agttatgcta cttacaatca gtcaggatat 1860

attccttcct ttctcaaaaa agaagtgcag tcagctggcc agaggatcca cttagcacct 1920

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ggacgtactt ataatcctac agcaaaaaac ctaaatattg tgaaccgtgc acagcccatt 2040

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atggtgtgaa accctacagc attgctccgt agagtacgtg caagttcctt gaccctggga 2160

aatgtctaca aatgtctatt tctactgagt tctggaagaa atatgcaaaa gtgggtactt 2220

ggaagggcaa aaatcatccc ctatttttact tatttccaag aaatgcattt tcttagcatc 2280

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aaaaaacaac ttccagaaaa tgtttagagt gttttagttt tcatttgttg tatgtgccca 2460

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aaagttctgg aaactgtgtt tgtttgatgc tggttcattg gacttttcaa attgttttgt 3240

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gctgctgggg cagtgatatc acatagtaca tatattattt ccttagttta tttccaaact 3420

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ttatacaaag gcatattata aaataataat gatatttttg tatagaagag tcaactgttc 3660

agatgtaaga tgttgaaaaa tgttaaaatc taaagagtaa tttatcctag tggtaatggt 3720

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acacttttaa actctgaata ggcattaaaa aaaatatggc taa 3823

<210> 177
<211> 623
<212> PRT
<213> Homo sapiens

<400> 177

Met Asn Arg Tyr Thr Thr Met Arg Gln Leu Gly Asp Gly Thr Tyr Gly
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Ser Val Leu Met Gly Lys Ser Asn Glu Ser Gly Glu Leu Val Ala Ile
20 25 30

Lys Arg Met Lys Arg Lys Phe Tyr Ser Trp Asp Glu Cys Met Asn Leu
35 40 45

Arg Glu Val Lys Ser Leu Lys Lys Leu Asn His Ala Asn Val Ile Lys
50 55 60

Leu Lys Glu Val Ile Arg Glu Asn Asp His Leu Tyr Phe Ile Phe Glu
65 70 75 80

Tyr Met Lys Glu Asn Leu Tyr Gln Leu Met Lys Asp Arg Asn Lys Leu
85 90 95

Phe Pro Glu Ser Val Ile Arg Asn Ile Met Tyr Gln Ile Leu Gln Gly
100 105 110

Leu Ala Phe Ile His Lys His Gly Phe Phe His Arg Asp Met Lys Pro
115 120 125

Glu Asn Leu Leu Cys Met Gly Pro Glu Leu Val Lys Ile Ala Asp Phe
130 135 140

Gly Leu Ala Arg Glu Leu Arg Ser Gln Pro Pro Tyr Thr Asp Tyr Val
145 150 155 160

Ser Thr Arg Trp Tyr Arg Ala Pro Glu Val Leu Leu Arg Ser Ser Val
165 170 175

Tyr Ser Ser Pro Ile Asp Val Trp Ala Val Gly Ser Ile Met Ala Glu
180 185 190

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Leu Tyr Met Leu Arg Pro Leu Phe Pro Gly Thr Ser Glu Val Asp Glu
       195                 200                 205

Ile Phe Lys Ile Cys Gln Val Leu Gly Thr Pro Lys Lys Ser Asp Trp
    210                 215                 220

Pro Glu Gly Tyr Gln Leu Ala Ser Ser Met Asn Phe Arg Phe Pro Gln
225                 230                 235                 240

Cys Val Pro Ile Asn Leu Lys Thr Leu Ile Pro Asn Ala Ser Asn Glu
                245                 250                 255

Ala Ile Gln Leu Met Thr Glu Met Leu Asn Trp Asp Pro Lys Lys Arg
            260                 265                 270

Pro Thr Ala Ser Gln Ala Leu Lys His Pro Tyr Phe Gln Val Gly Gln
        275                 280                 285

Val Leu Gly Pro Ser Ser Asn His Leu Glu Ser Lys Gln Ser Leu Asn
    290                 295                 300

Lys Gln Leu Gln Pro Leu Glu Ser Lys Pro Ser Leu Val Glu Val Glu
305                 310                 315                 320

Pro Lys Pro Leu Pro Asp Ile Ile Asp Gln Val Val Gly Gln Pro Gln
                325                 330                 335

Pro Lys Thr Ser Gln Gln Pro Leu Gln Pro Ile Gln Pro Pro Gln Asn
            340                 345                 350

Leu Ser Val Gln Gln Pro Pro Lys Gln Gln Ser Gln Glu Lys Pro Pro
        355                 360                 365

Gln Thr Leu Phe Pro Ser Ile Val Lys Asn Met Pro Thr Lys Pro Asn
    370                 375                 380

Gly Thr Leu Ser His Lys Ser Gly Arg Arg Arg Trp Gly Gln Thr Ile
385                 390                 395                 400

Phe Lys Ser Gly Asp Ser Trp Glu Glu Leu Glu Asp Tyr Asp Phe Gly
                405                 410                 415
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Ala Ser His Ser Lys Lys Pro Ser Met Gly Val Phe Lys Glu Lys Arg
            420                 425                 430

Lys Lys Asp Ser Pro Phe Arg Leu Pro Glu Pro Val Pro Ser Gly Ser
        435                 440                 445

Asn His Ser Thr Gly Glu Asn Lys Ser Leu Pro Ala Val Thr Ser Leu
    450                 455                 460

Lys Ser Asp Ser Glu Leu Ser Thr Ala Pro Thr Ser Lys Gln Tyr Tyr
465                 470                 475                 480

Leu Lys Gln Ser Arg Tyr Leu Pro Gly Val Asn Pro Lys Lys Val Ser
                485                 490                 495

Leu Ile Ala Ser Gly Lys Glu Ile Asn Pro His Thr Trp Ser Asn Gln
            500                 505                 510

Leu Phe Pro Lys Ser Leu Gly Pro Val Gly Ala Glu Leu Ala Phe Lys
        515                 520                 525

Arg Ser Asn Ala Gly Asn Leu Gly Ser Tyr Ala Thr Tyr Asn Gln Ser
    530                 535                 540

Gly Tyr Ile Pro Ser Phe Leu Lys Lys Glu Val Gln Ser Ala Gly Gln
545                 550                 555                 560

Arg Ile His Leu Ala Pro Leu Asn Ala Thr Ala Ser Glu Tyr Thr Trp
                565                 570                 575

Asn Thr Lys Thr Gly Arg Gly Gln Phe Ser Gly Arg Thr Tyr Asn Pro
            580                 585                 590

Thr Ala Lys Asn Leu Asn Ile Val Asn Arg Ala Gln Pro Ile Pro Ser
        595                 600                 605

Val His Gly Arg Thr Asp Trp Val Ala Lys Tyr Gly Gly His Arg
    610                 615                 620
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<210> 178
<211> 2857
<212> DNA
<213> Homo sapiens

<400> 178
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tgttttcttt tgtttgtata tatgtttatt ggtaacaggt gacactggaa gcaatgaaca 180

ccacagtgat gcaaggcttc aacagatctg agcggtgccc cagagacact cggatagtac 240

agctggtatt cccagccctc tacacagtgg ttttcttgac cggcatcctg ctgaatactt 300

tggctctgtg ggtgtttgtt cacatcccca gctcctccac cttcatcatc tacctcaaaa 360

acactttggt ggccgacttg ataatgacac tcatgcttcc tttcaaaatc ctctctgact 420

cacacctggc accctggcag ctcagagctt ttgtgtgtcg tttttcttcg gtgatatttt 480

atgagaccat gtatgtgggc atcgtgctgt tagggctcat agcctttgac agattcctca 540

agatcatcag acctttgaga aatatttttc taaaaaaacc tgtttttgca aaaacggtct 600

caatcttcat ctggttcttt ttgttcttca tctccctgcc aaatatgatc ttgagcaaca 660

aggaagcaac accatcgtct gtgaaaaagt gtgcttcctt aaaggggcct ctggggctga 720

aatggcatca aatggtaaat aacatatgcc agtttatttt ctggactgtt tttatcctaa 780

tgcttgtgtt ttatgtggtt attgcaaaaa aagtatatga ttcttataga aagtccaaaa 840

gtaaggacag aaaaaacaac aaaaagctgg aaggcaaagt atttgttgtc gtggctgtct 900

tctttgtgtg ttttgctcca tttcattttg ccagagttcc atatactcac agtcaaacca 960

acaataagac tgactgtaga ctgcaaaatc aactgtttat tgctaaagaa acaactctct 1020

ttttggcagc aactaacatt tgtatggatc ccttaatata catattctta tgtaaaaaat 1080

tcacagaaaa gctaccatgt atgcaaggga gaaagaccac agcatcaagc caagaaaatc 1140

atagcagtca gacagacaac ataaccttag gctgacaact gtacataggg ttaacttcta 1200

tttattgatg agacttccgt agataatgtg gaaatcaaat ttaaccaaga aaaaaagatt 1260

ggaacaaatg ctctcttaca ttttattatc ctggtgtaca gaaaagatta tataaaattt 1320

aaatccacat agatctattc ataagctgaa tgaaccatta ctaagagaat gcaacaggat 1380

acaaatggcc actagaggtc attatttctt tctttctttt ttttttttt aatttcaaga 1440

gcatttcact ttaacatttt ggaaaagact aaggagaaac gtatatccct acaaacctcc 1500

cctccaaaca ccttctcaca ttcttttcca caattcacat aacactactg cttttgtgcc 1560

ccttaaatgt agatatgtgc tgaaagaaaa aaaaaacgcc caactcttga agtccattgc 1620

tgaaaactgc agccaggggt tgaaagggat gcagacttga agagtctgag gaactgaagt 1680

gggtcagcaa gacctctgaa atcctgggta aaggattttc tccttacaat tacaaacagc 1740

ctctttcaca ttacaataat ataccatagg aggcacaagc accattatta agccactttg 1800

cttacacctt aagtgtgtac aattcaagtg tgagaatgct gtgttaacta ttctttggaa 1860

ttctccttct gtccagcaaa tactctaatg atggttaaac atggcaccta ctcagcaatg 1920

ccttcctgga ccacaacccc tatccccctg ccccaccctc ctcattaaaa acaaatactt 1980

ctactgtttg ggtgtgtgat agggttctca atgcagatct ccctttttcta gttagctata 2040

ttcttgactg catccgctaa aaatgttaaa gcttcttgag agacagacat gccagatttt 2100

cttggtatct cccataatac gacctacagt ccatggtcta cagatgtttt aaatagaatt 2160

gctattctcg atacatacaa agacgtaatt gctgacccac aatcagtaac atccatattg 2220

ggagattttt caaaggatgg tgaccctgct tgtatttatt taccttggta ttttttcttg 2280

catccttctg tgattcaaaa aagtaaaatg tggctttctg aaatgatgga taagagtcta 2340

catcttctag aaaaaataca taaaggagta gttaagctct gtaaatgtgc cacgagctcc 2400

aacacgacca tcgtagggtg aagcccacgt tttcttccat ggcctcaaag gccctagaac 2460

ttgcctacct ttctggcctt acctcctagc tacttatcca tctcttgaac tttatactct 2520

tgtataaatt tctaactttc agaaaatgcc atactctgtt ttggcaccac acatgtatat 2580

ttccccctgg tacacttgga agactcttat ccatctgtga aaccctatgt tgtcatcact 2640

tggtccatga aatattacct ggccaatatc ccaccatcac ctcaaaccca atcacccccct 2700

cctctgtatg ctgtcacacc tatattatta aacttatcac attgcattgt aattacttcc 2760

tgacctttgt atctactctt ttagtaactg atgtatatat ctgaaaggag agattgtttc 2820

attgtgcaat caataaatgt ttgataaaat aaagccc 2857

<210> 179
<211> 333
<212> PRT
<213> Homo sapiens

<400> 179

Met Asn Thr Thr Val Met Gln Gly Phe Asn Arg Ser Glu Arg Cys Pro
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Arg Asp Thr Arg Ile Val Gln Leu Val Phe Pro Ala Leu Tyr Thr Val
20 25 30

Val Phe Leu Thr Gly Ile Leu Leu Asn Thr Leu Ala Leu Trp Val Phe

```
        35                  40                  45

Val His Ile Pro Ser Ser Ser Thr Phe Ile Ile Tyr Leu Lys Asn Thr
    50                  55                  60

Leu Val Ala Asp Leu Ile Met Thr Leu Met Leu Pro Phe Lys Ile Leu
65                  70                  75                  80

Ser Asp Ser His Leu Ala Pro Trp Gln Leu Arg Ala Phe Val Cys Arg
                85                  90                  95

Phe Ser Ser Val Ile Phe Tyr Glu Thr Met Tyr Val Gly Ile Val Leu
            100                 105                 110

Leu Gly Leu Ile Ala Phe Asp Arg Phe Leu Lys Ile Ile Arg Pro Leu
        115                 120                 125

Arg Asn Ile Phe Leu Lys Lys Pro Val Phe Ala Lys Thr Val Ser Ile
    130                 135                 140

Phe Ile Trp Phe Phe Leu Phe Phe Ile Ser Leu Pro Asn Met Ile Leu
145                 150                 155                 160

Ser Asn Lys Glu Ala Thr Pro Ser Ser Val Lys Lys Cys Ala Ser Leu
                165                 170                 175

Lys Gly Pro Leu Gly Leu Lys Trp His Gln Met Val Asn Asn Ile Cys
            180                 185                 190

Gln Phe Ile Phe Trp Thr Val Phe Ile Leu Met Leu Val Phe Tyr Val
        195                 200                 205

Val Ile Ala Lys Lys Val Tyr Asp Ser Tyr Arg Lys Ser Lys Ser Lys
    210                 215                 220

Asp Arg Lys Asn Asn Lys Lys Leu Glu Gly Lys Val Phe Val Val Val
225                 230                 235                 240

Ala Val Phe Phe Val Cys Phe Ala Pro Phe His Phe Ala Arg Val Pro
                245                 250                 255

Tyr Thr His Ser Gln Thr Asn Asn Lys Thr Asp Cys Arg Leu Gln Asn
            260                 265                 270
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```
Gln Leu Phe Ile Ala Lys Glu Thr Thr Leu Phe Leu Ala Ala Thr Asn
        275                 280                 285

Ile Cys Met Asp Pro Leu Ile Tyr Ile Phe Leu Cys Lys Lys Phe Thr
    290                 295                 300

Glu Lys Leu Pro Cys Met Gln Gly Arg Lys Thr Thr Ala Ser Ser Gln
305                 310                 315                 320

Glu Asn His Ser Ser Gln Thr Asp Asn Ile Thr Leu Gly
                325                 330
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<210> 180
<211> 1242
<212> DNA
<213> Homo sapiens

<400> 180

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gacattggct ttgggaaact ggaaacatac gtgaaactgg acaaactggg agagggcacc    180

tatgccacag tcttcaaagg gcgcagcaaa ctgacggaga accttgtggc cctgaaagag    240

atccggctgg agcacgagga gggagcgccc tgcactgcca tccgagaggt gtctctgctg    300

aagaacctga agcacgccaa tattgtgacc ctgcatgacc tcatccacac agatcggtcc    360

ctcaccctgg tgtttgagta cctggacagt gacctgaagc agtatctgga ccactgtggg    420

aacctcatga gcatgcacaa cgtcaagatt ttcatgttcc agctgctccg gggcctcgcc    480

tactgtcaca cccgcaagat cctgcaccgg gacctgaagc cccagaacct gctcatcaac    540

gagaggggag agctgaagct ggccgacttt ggactggcca gggccaagtc agtgcccaca    600

aagacttact ccaatgaggt ggtgaccctg tggtacaggc cccccgatgt gctgctggga    660

tccacagagt actccacccc cattgctatg tggggcgtgg gctgcatcca ctacgagatg    720

gccacaggga ggcccctctt cccgggctcc acagtcaagg aggagctgca cctcatcttt    780

cgcctcctcg ggacccccac agaagagacg tggcccggcg tgaccgcctt ctctgagttc    840

cgcacctaca gcttcccctg ctacctcccg cagccgctca tcaaccacgc gcccaggttg    900

gatacggatg gcatccacct cctgagcagc ctgctcgtgt atgaatccaa gagtcgcatg    960

tcagcagagg ctgccctgag tcactcctac ttccggtctc tgggagagcg tgtgcaccag   1020
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cttgaagaca ctgcctccat cttctccctg aaggagatcc agctccagaa ggacccaggc 1080

taccgaggct tggccttcca gcagccagga cgagggaaga acaggcggca gagcatcttc 1140

tgagccacgc ccaccttgct gtggccaagg gacaagagac cacatggagc acaaattcgg 1200

gtaggatgga gcctgtgtgg ccctcggagg actgaacaac ga 1242

<210> 181
<211> 380
<212> PRT
<213> Homo sapiens

<400> 181

Lys Arg Leu Ser Leu Pro Met Asp Ile Arg Leu Pro Gln Glu Phe Leu
1 5 10 15

Gln Lys Leu Gln Met Glu Ser Pro Asp Leu Pro Lys Pro Leu Ser Arg
20 25 30

Met Ser Arg Arg Ala Ser Leu Ser Asp Ile Gly Phe Gly Lys Leu Glu
35 40 45

Thr Tyr Val Lys Leu Asp Lys Leu Gly Glu Gly Thr Tyr Ala Thr Val
50 55 60

Phe Lys Gly Arg Ser Lys Leu Thr Glu Asn Leu Val Ala Leu Lys Glu
65 70 75 80

Ile Arg Leu Glu His Glu Glu Gly Ala Pro Cys Thr Ala Ile Arg Glu
85 90 95

Val Ser Leu Leu Lys Asn Leu Lys His Ala Asn Ile Val Thr Leu His
100 105 110

Asp Leu Ile His Thr Asp Arg Ser Leu Thr Leu Val Phe Glu Tyr Leu
115 120 125

Asp Ser Asp Leu Lys Gln Tyr Leu Asp His Cys Gly Asn Leu Met Ser
130 135 140

Met His Asn Val Lys Ile Phe Met Phe Gln Leu Leu Arg Gly Leu Ala
145 150 155 160

```
Tyr Cys His Thr Arg Lys Ile Leu His Arg Asp Leu Lys Pro Gln Asn
                165                 170                 175

Leu Leu Ile Asn Glu Arg Gly Glu Leu Lys Leu Ala Asp Phe Gly Leu
            180                 185                 190

Ala Arg Ala Lys Ser Val Pro Thr Lys Thr Tyr Ser Asn Glu Val Val
        195                 200                 205

Thr Leu Trp Tyr Arg Pro Pro Asp Val Leu Leu Gly Ser Thr Glu Tyr
    210                 215                 220

Ser Thr Pro Ile Ala Met Trp Gly Val Gly Cys Ile His Tyr Glu Met
225                 230                 235                 240

Ala Thr Gly Arg Pro Leu Phe Pro Gly Ser Thr Val Lys Glu Glu Leu
                245                 250                 255

His Leu Ile Phe Arg Leu Leu Gly Thr Pro Thr Glu Glu Thr Trp Pro
            260                 265                 270

Gly Val Thr Ala Phe Ser Glu Phe Arg Thr Tyr Ser Phe Pro Cys Tyr
        275                 280                 285

Leu Pro Gln Pro Leu Ile Asn His Ala Pro Arg Leu Asp Thr Asp Gly
    290                 295                 300

Ile His Leu Leu Ser Ser Leu Leu Val Tyr Glu Ser Lys Ser Arg Met
305                 310                 315                 320

Ser Ala Glu Ala Ala Leu Ser His Ser Tyr Phe Arg Ser Leu Gly Glu
                325                 330                 335

Arg Val His Gln Leu Glu Asp Thr Ala Ser Ile Phe Ser Leu Lys Glu
            340                 345                 350

Ile Gln Leu Gln Lys Asp Pro Gly Tyr Arg Gly Leu Ala Phe Gln Gln
        355                 360                 365

Pro Gly Arg Gly Lys Asn Arg Arg Gln Ser Ile Phe
    370                 375                 380
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<210> 182

<211> 5399
<212> DNA
<213> Homo sapiens

<400> 182
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cggccaggtc cccgacttag ggatggcaaa cttgcgcccc gtggccgccc ccgccagcgc 120

cggcccccgc tcctgctgct gacggcgccc aggaaatcca cagcagtgat acatgtgacg 180

tccacactga cagtgccctc ctgtgggcat ggctcaggtt gtgcgcagtt cctggcacac 240

tggctgtaac tccgcccctt tctctccctc tcagtaaagc aagattacgc ggtgacatgc 300

ctcacagctg atcacgacac acggggatgg agagcaagag ttatggagaa tacaggttgg 360

atgggcaagg gacataggat gaccccagcc tgtcccctct tactgtctgt gattctgtcc 420

ctgcgcctgg ccaccgcctt cgaccccgcc cccagtgcct gctctgccct ggcctcgggt 480

gtgctctacg gggccttctc gctgcaggac ctctttccta ccatcgcctc gggctgctcc 540

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35 40 45

Ile Ala Ser Gly Cys Ser Trp Thr Leu Glu Asn Pro Asp Pro Thr Lys
50 55 60

Tyr Ser Leu Tyr Leu Arg Phe Asn Arg Gln Glu Gln Val Cys Ala His
65 70 75 80

Phe Ala Pro Arg Leu Leu Pro Leu Asp His Tyr Leu Val Asn Phe Thr
85 90 95

Cys Leu Arg Pro Ser Pro Glu Glu Ala Val Ala Gln Ala Glu Ser Glu
100 105 110

Val Gly Arg Pro Glu Glu Glu Glu Ala Glu Ala Ala Ala Gly Leu Glu
115 120 125

Leu Cys Ser Gly Ser Gly Pro Phe Thr Phe Leu His Phe Asp Lys Asn
130 135 140

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Phe Val Gln Leu Cys Leu Ser Ala Glu Pro Ser Glu Ala Pro Arg Leu
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Leu Ala Pro Ala Ala Leu Ala Phe Arg Phe Val Glu Val Leu Leu Ile
                165                 170                 175

Asn Asn Asn Asn Ser Ser Gln Phe Thr Cys Gly Val Leu Cys Arg Trp
            180                 185                 190

Ser Glu Glu Cys Gly Arg Ala Ala Gly Arg Ala Cys Gly Phe Ala Gln
        195                 200                 205

Pro Gly Cys Ser Cys Pro Gly Glu Ala Gly Ala Gly Ser Thr Thr Thr
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Thr Ser Pro Gly Pro Pro Ala Ala His Thr Leu Ser Asn Ala Leu Val
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Pro Gly Gly Pro Ala Pro Pro Ala Glu Ala Asp Leu His Ser Gly Ser
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Ser Asn Asp Leu Phe Thr Thr Glu Met Arg Tyr Gly Glu Glu Pro Glu
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Glu Glu Pro Lys Val Lys Thr Gln Trp Pro Arg Ser Ala Asp Glu Pro
        275                 280                 285

Gly Leu Tyr Met Ala Gln Thr Gly Asp Pro Ala Ala Glu Glu Trp Ser
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Pro Trp Ser Val Cys Ser Leu Thr Cys Gly Gln Gly Leu Gln Val Arg
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Thr Arg Ser Cys Val Ser Ser Pro Tyr Gly Thr Leu Cys Ser Gly Pro
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Gly Val Trp Glu Glu Trp Gly Ser Trp Ser Leu Cys Ser Arg Ser Cys
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Gly Pro Cys Ser Thr Ser Cys Ala Asn Gly Thr Gln Gln Arg Ser Arg
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Lys Cys Ser Val Ala Gly Pro Ala Trp Ala Thr Cys Thr Gly Ala Leu
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Thr Asp Thr Arg Glu Cys Ser Asn Leu Glu Cys Pro Ala Thr Asp Ser
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Lys Trp Gly Pro Trp Asn Ala Trp Ser Leu Cys Ser Lys Thr Cys Asp
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Gly Tyr Pro Cys Glu Gly Thr Gly Glu Glu Val Lys Pro Cys Ser Glu
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Lys Arg Cys Pro Ala Phe His Glu Met Cys Arg Asp Glu Tyr Val Met
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Leu Met Thr Trp Lys Lys Ala Ala Ala Gly Glu Ile Ile Tyr Asn Lys
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Cys Pro Pro Asn Ala Ser Gly Ser Ala Ser Arg Arg Cys Leu Leu Ser
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Ala Gln Gly Val Ala Tyr Trp Gly Leu Pro Ser Phe Ala Arg Cys Ile
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Ser His Glu Tyr Arg Tyr Leu Tyr Leu Ser Leu Arg Glu His Leu Ala
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Lys Gly Gln Arg Met Leu Ala Gly Glu Gly Met Ser Gln Val Val Arg
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Ala Thr Tyr Val Pro Ser Ala Asp Asp Val Gln Arg Phe Phe Gln Val
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Gln Gln Val Ser Pro Gly Ser Val His Leu Leu Arg Val Val Glu Asp
675 680 685

Phe Ile His Leu Val Gly Asp Ala Leu Lys Ala Phe Gln Ser Ser Leu
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Ala Val Ser Ser Asp Ile Thr Phe Pro Met Arg Gly Arg Arg Gly Met
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Lys Asp Trp Val Arg His Ser Glu Asp Arg Leu Phe Leu Pro Lys Glu
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Val Leu Ser Leu Ser Ser Pro Gly Lys Pro Ala Thr Ser Gly Ala Ala
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Gly Ser Pro Gly Arg Gly Arg Gly Pro Gly Thr Val Pro Pro Gly Pro
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Gly His Ser His Gln Arg Leu Leu Pro Ala Asp Pro Asp Glu Ser Ser
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Pro Pro Pro Arg Pro Pro Leu Ala Val Thr Ser Arg Val Met Thr Val
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Thr Val Arg Pro Pro Thr Gln Pro Pro Ala Glu Pro Leu Ile Thr Val
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Glu Leu Ser Tyr Ile Ile Asn Gly Thr Thr Asp Pro His Cys Ala Ser
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Trp Asp Tyr Ser Arg Ala Asp Ala Ser Ser Gly Asp Trp Asp Thr Glu
865                 870                 875                 880

Asn Cys Gln Thr Leu Glu Thr Gln Ala Ala His Thr Arg Cys Gln Cys
                885                 890                 895

Gln His Leu Ser Thr Phe Ala Val Leu Ala Gln Pro Pro Lys Asp Leu
            900                 905                 910

Thr Leu Glu Leu Ala Gly Ser Pro Ser Val Pro Leu Val Ile Gly Cys
        915                 920                 925

Ala Val Ser Cys Met Ala Leu Leu Thr Leu Leu Ala Ile Tyr Ala Ala
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Phe Trp Arg Phe Ile Lys Ser Glu Arg Ser Ile Ile Leu Leu Asn Phe
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Cys Leu Ser Ile Leu Ala Ser Asn Ile Leu Ile Leu Val Gly Gln Ser
                965                 970                 975

Arg Val Leu Ser Lys Gly Val Cys Thr Met Thr Ala Ala Phe Leu His
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Phe Phe Phe Leu Ser Ser Phe Cys  Trp Val Leu Thr Glu  Ala Trp Gln
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Ser Tyr  Leu Ala Val Ile Gly  Arg Met Arg Thr Arg  Leu Val Arg
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Lys Arg  Phe Leu Cys Leu Gly  Trp Gly Leu Pro Ala  Leu Val Val
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Ala Val  Ser Val Gly Phe Thr  Arg Thr Lys Gly Tyr  Gly Thr Ser
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Val Gly  Pro Ala Ala Val Ile  Val Leu Val Asn Met  Leu Ile Gly
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Ile Ile  Val Phe Asn Lys Leu  Met Ala Arg Asp Gly  Ile Ser Asp
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Lys Ser  Lys Lys Gln Arg Ala  Gly Ser Glu Arg Cys  Pro Trp Ala
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Ser Leu  Leu Leu Pro Cys Ser  Ala Cys Gly Ala Val  Pro Ser Pro
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Leu Leu  Ser Ser Ala Ser Ala  Arg Asn Ala Met Ala  Ser Leu Trp
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Ser Ser  Cys Val Val Leu Pro  Leu Leu Ala Leu Thr  Trp Met Ser
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Ala Val  Leu Ala Met Thr Asp  Arg Arg Ser Val Leu  Phe Gln Ala
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Leu Phe  Ala Val Phe Asn Ser  Ala Gln Gly Phe Val  Ile Thr Ala
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Val His  Cys Phe Leu Arg Arg  Glu Val Gln Asp Val  Val Lys Cys
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Gln Met  Gly Val Cys Arg Ala  Asp Glu Ser Glu Asp  Ser Pro Asp
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Ser Cys  Lys Asn Gly Gln Leu  Gln Ile Leu Ser Asp  Phe Glu Lys
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Asp Val  Asp Leu Ala Cys Gln  Thr Val Leu Phe Lys  Glu Val Asn
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Thr Cys  Asn Pro Ser Thr Ile  Thr Gly Thr Leu Ser  Arg Leu Ser
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Leu Asp  Glu Asp Glu Glu Pro  Lys Ser Cys Leu Val  Gly Pro Glu
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Met Ala  Ala Ser Pro Gly Leu  Gly Glu Pro Pro Pro  Pro Gln Glu
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Ala Asn  Pro Val Tyr Met Cys  Gly Glu Gly Gly Leu  Arg Gln Leu
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Asp Leu  Thr Trp Leu Arg Pro  Thr Glu Pro Gly Ser  Glu Gly Asp
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Tyr Met  Val Leu Pro Arg Arg  Thr Leu Ser Leu Gln  Pro Gly Gly
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Gly Gly  Gly Gly Gly Glu Asp  Ala Pro Arg Ala Arg  Pro Glu Gly
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Thr Pro  Arg Arg Ala Ala Lys  Thr Val Ala His Thr  Glu Gly Tyr
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Pro Ser  Phe Leu Ser Val Asp  His Ser Gly Leu Gly  Leu Gly Pro
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Ala Tyr  Gly Ser Leu Gln Asn  Pro Tyr Gly Met Thr  Phe Gln Pro
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Pro Pro  Pro Thr Pro Ser Ala  Arg Gln Val Pro Glu  Pro Gly Glu
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Arg Ser  Arg Thr Met Pro Arg  Thr Val Pro Gly Ser  Thr Met Lys
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Met Gly  Ser Leu Glu Arg Lys  Lys Leu Arg Tyr Ser  Asp Leu Asp
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Phe Glu  Val Met His Thr Arg  Lys Arg His Ser Glu  Leu Tyr His
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Glu Leu  Asn Gln Lys Phe His  Thr Phe Asp Arg Tyr  Arg Ser Gln
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<210> 185
<211> 814
<212> PRT
<213> Homo sapiens

<400> 185

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His Phe Arg Glu Thr Leu Lys Ser His Glu Ala Glu Leu Asp Lys Thr
20 25 30

Asn Lys Phe Ile Lys Glu Leu Ile Lys Asp Gly Lys Ser Leu Ile Ser
35 40 45

```
Ala Leu Lys Asn Leu Ser Ser Ala Lys Arg Lys Phe Ala Asp Ser Leu
    50                  55                  60

Asn Glu Phe Lys Phe Gln Cys Ile Gly Asp Ala Glu Thr Asp Asp Glu
65                  70                  75                  80

Met Cys Ile Ala Arg Ser Leu Gln Glu Phe Ala Thr Val Leu Arg Asn
                85                  90                  95

Leu Glu Asp Glu Arg Ile Arg Met Ile Glu Asn Ala Ser Glu Val Leu
            100                 105                 110

Ile Thr Pro Leu Glu Lys Phe Arg Lys Glu Gln Ile Gly Ala Ala Lys
        115                 120                 125

Glu Ala Lys Lys Lys Tyr Asp Lys Glu Thr Glu Lys Tyr Cys Gly Ile
    130                 135                 140

Leu Glu Lys His Leu Asn Leu Ser Ser Lys Lys Lys Glu Ser Gln Leu
145                 150                 155                 160

Gln Glu Ala Asp Ser Gln Val Asp Leu Val Arg Gln His Phe Tyr Glu
                165                 170                 175

Val Ser Leu Glu Tyr Val Phe Lys Val Gln Glu Val Gln Glu Arg Lys
            180                 185                 190

Met Phe Glu Phe Val Glu Pro Leu Leu Ala Phe Leu Gln Gly Leu Phe
        195                 200                 205

Thr Phe Tyr His His Gly Tyr Glu Leu Ala Lys Asp Phe Gly Asp Phe
    210                 215                 220

Lys Thr Gln Leu Thr Ile Ser Ile Gln Asn Thr Arg Asn Arg Phe Glu
225                 230                 235                 240

Gly Thr Arg Ser Glu Val Glu Ser Leu Met Lys Lys Met Lys Glu Asn
                245                 250                 255

Pro Leu Glu His Lys Thr Ile Ser Pro Tyr Thr Met Glu Gly Tyr Leu
            260                 265                 270

Tyr Val Gln Glu Lys Arg His Phe Gly Thr Ser Trp Val Lys His Tyr
```

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        275                 280                 285

Cys Thr Tyr Gln Arg Asp Ser Lys Gln Ile Thr Met Val Pro Phe Asp
    290                 295                 300

Gln Lys Ser Gly Gly Lys Gly Gly Glu Asp Glu Ser Val Ile Leu Lys
305                 310                 315                 320

Ser Cys Thr Arg Arg Lys Thr Asp Ser Ile Glu Lys Arg Phe Cys Phe
                325                 330                 335

Asp Val Glu Ala Val Asp Arg Pro Gly Val Ile Thr Met Gln Ala Leu
            340                 345                 350

Ser Glu Glu Asp Arg Arg Leu Trp Met Glu Ala Met Asp Gly Arg Glu
        355                 360                 365

Pro Val Tyr Asn Ser Asn Lys Asp Ser Gln Ser Glu Gly Thr Ala Gln
    370                 375                 380

Leu Asp Ser Ile Gly Phe Ser Ile Ile Arg Lys Cys Ile His Ala Val
385                 390                 395                 400

Glu Thr Arg Gly Ile Asn Glu Gln Gly Leu Tyr Arg Ile Val Gly Val
                405                 410                 415

Asn Ser Arg Val Gln Lys Leu Leu Ser Val Leu Met Asp Pro Lys Thr
            420                 425                 430

Ala Ser Glu Thr Glu Thr Asp Ile Cys Ala Glu Trp Glu Ile Lys Thr
        435                 440                 445

Ile Thr Ser Ala Leu Lys Thr Tyr Leu Arg Met Leu Pro Gly Pro Leu
    450                 455                 460

Met Met Tyr Gln Phe Gln Arg Ser Phe Ile Lys Ala Ala Lys Leu Glu
465                 470                 475                 480

Asn Gln Glu Ser Arg Val Ser Glu Ile His Ser Leu Val His Arg Leu
                485                 490                 495

Pro Glu Lys Asn Arg Gln Met Leu Gln Leu Leu Met Asn His Leu Ala
            500                 505                 510
```

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Asn Val Ala Asn Asn His Lys Gln Asn Leu Met Thr Val Ala Asn Leu
        515                 520                 525

Gly Val Val Phe Gly Pro Thr Leu Leu Arg Pro Gln Glu Glu Thr Val
    530                 535                 540

Ala Ala Ile Met Asp Ile Lys Phe Gln Asn Ile Val Ile Glu Ile Leu
545                 550                 555                 560

Ile Glu Asn His Glu Lys Ile Phe Asn Thr Val Pro Asp Met Pro Leu
                565                 570                 575

Thr Asn Ala Gln Leu His Leu Ser Arg Lys Lys Ser Ser Asp Ser Lys
            580                 585                 590

Pro Pro Ser Cys Ser Glu Arg Pro Leu Thr Leu Phe His Thr Val Gln
        595                 600                 605

Ser Thr Glu Lys Gln Glu Gln Arg Asn Ser Ile Ile Asn Ser Ser Leu
    610                 615                 620

Glu Ser Val Ser Ser Asn Pro Asn Ser Ile Leu Asn Ser Ser Ser Ser
625                 630                 635                 640

Leu Gln Pro Asn Met Asn Ser Ser Asp Pro Asp Leu Ala Val Val Lys
                645                 650                 655

Pro Thr Arg Pro Asn Ser Leu Pro Pro Asn Pro Ser Pro Thr Ser Pro
            660                 665                 670

Leu Ser Pro Ser Trp Pro Met Phe Ser Ala Pro Ser Ser Pro Met Pro
        675                 680                 685

Thr Ser Ser Thr Ser Ser Asp Ser Ser Pro Val Arg Ser Val Ala Gly
    690                 695                 700

Phe Val Trp Phe Ser Val Ala Ala Val Val Leu Ser Leu Ala Arg Ser
705                 710                 715                 720

Ser Leu His Ala Val Phe Ser Leu Leu Val Asn Phe Val Pro Cys His
                725                 730                 735
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Pro Asn Leu His Leu Leu Phe Asp Arg Pro Glu Glu Ala Val His Glu
            740                 745                 750

Asp Ser Ser Thr Pro Phe Arg Lys Ala Lys Ala Leu Tyr Ala Cys Lys
        755                 760                 765

Ala Glu His Asp Ser Glu Leu Ser Phe Thr Ala Gly Thr Val Phe Asp
    770                 775                 780

Asn Val His Pro Ser Gln Glu Pro Gly Trp Leu Glu Gly Thr Leu Asn
785                 790                 795                 800

Gly Lys Thr Gly Leu Ile Pro Glu Asn Tyr Val Glu Phe Leu
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<212> DNA
<213> Homo sapiens

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caagtcccct gtcggttcct ccgtccctga gtgtccttgg cgctgccttg tgcccgccca 180

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tggtcgccct ctgggtaaag gaaagtttgg taatgtttat ttggcaagag aaaagcaaag 720

caagtttatt ctggctctta aagtgttatt taaagctcag ctggagaaag ccggagtgga 780

gcatcagctc agaagagaag tagaaataca gtcccacctt cggcatccta atattcttag 840

actgtatggt tatttccatg atgctaccag agtctaccta attctggaat atgcaccact 900

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<210> 187
<211> 403
<212> PRT
<213> Homo sapiens

<400> 187

Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
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Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Ile Pro
            20                  25                  30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Val Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100                 105                 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115                 120                 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240
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Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
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<211> 5228
<212> DNA
<213> Homo sapiens

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aaaaaaaa 5228

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<212> PRT
<213> Homo sapiens

<400> 189

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Ser Arg Lys Asp Leu Ile Gly His Gly Ala Phe Ala Val Val Phe Lys
            20                  25                  30

Gly Arg His Arg Glu Lys His Asp Leu Glu Val Ala Val Lys Cys Ile
        35                  40                  45

Asn Lys Lys Asn Leu Ala Lys Ser Gln Thr Leu Leu Gly Lys Glu Ile
    50                  55                  60

Lys Ile Leu Lys Glu Leu Lys His Glu Asn Ile Val Ala Leu Tyr Asp
65                  70                  75                  80

Phe Gln Glu Met Ala Asn Ser Val Tyr Leu Val Met Glu Tyr Cys Asn
                85                  90                  95

Gly Gly Asp Leu Ala Asp Tyr Leu His Ala Met Arg Thr Leu Ser Glu
            100                 105                 110

Asp Thr Ile Arg Leu Phe Leu Gln Gln Ile Ala Gly Ala Met Arg Leu
        115                 120                 125

Leu His Ser Lys Gly Ile Ile His Arg Asp Leu Lys Pro Gln Asn Ile
    130                 135                 140

Leu Leu Ser Asn Pro Ala Gly Arg Arg Ala Asn Pro Asn Ser Ile Arg
145                 150                 155                 160

Val Lys Ile Ala Asp Phe Gly Phe Ala Arg Tyr Leu Gln Ser Asn Met
                165                 170                 175

Met Ala Ala Thr Leu Cys Gly Ser Pro Met Tyr Met Ala Pro Glu Val
            180                 185                 190

Ile Met Ser Gln His Tyr Asp Gly Lys Ala Asp Leu Trp Ser Ile Gly
        195                 200                 205
```

```
Thr Ile Val Tyr Gln Cys Leu Thr Gly Lys Ala Pro Phe Gln Ala Ser
    210                 215                 220

Ser Pro Gln Asp Leu Arg Leu Phe Tyr Glu Lys Asn Lys Thr Leu Val
225                 230                 235                 240

Pro Thr Ile Pro Arg Glu Thr Ser Ala Pro Leu Arg Gln Leu Leu Leu
                245                 250                 255

Ala Leu Leu Gln Arg Asn His Lys Asp Arg Met Asp Phe Asp Glu Phe
            260                 265                 270

Phe His His Pro Phe Leu Asp Ala Ser Pro Ser Val Arg Lys Ser Pro
        275                 280                 285

Pro Val Pro Val Pro Ser Tyr Pro Ser Ser Gly Ser Gly Ser Ser Ser
    290                 295                 300

Ser Ser Ser Ser Thr Ser His Leu Ala Ser Pro Pro Ser Leu Gly Glu
305                 310                 315                 320

Met Gln Gln Leu Gln Lys Thr Leu Ala Ser Pro Ala Asp Thr Ala Gly
                325                 330                 335

Phe Leu His Ser Ser Arg Asp Ser Gly Gly Ser Lys Asp Ser Ser Cys
            340                 345                 350

Asp Thr Asp Asp Phe Val Met Val Pro Ala Gln Phe Pro Gly Asp Leu
        355                 360                 365

Val Ala Glu Ala Pro Ser Ala Lys Pro Pro Pro Asp Ser Leu Met Cys
    370                 375                 380

Ser Gly Ser Ser Leu Val Ala Ser Ala Gly Leu Glu Ser His Gly Arg
385                 390                 395                 400

Thr Pro Ser Pro Ser Pro Pro Cys Ser Ser Ser Pro Ser Pro Ser Gly
                405                 410                 415

Arg Ala Gly Pro Phe Ser Ser Ser Arg Cys Gly Ala Ser Val Pro Ile
            420                 425                 430
```

```
Pro Val Pro Thr Gln Val Gln Asn Tyr Gln Arg Ile Glu Arg Asn Leu
        435                 440                 445

Gln Ser Pro Thr Gln Phe Gln Thr Pro Arg Ser Ser Ala Ile Arg Arg
    450                 455                 460

Ser Gly Ser Thr Ser Pro Leu Gly Phe Ala Arg Ala Ser Pro Ser Pro
465                 470                 475                 480

Pro Ala His Ala Glu His Gly Gly Val Leu Ala Arg Lys Met Ser Leu
                485                 490                 495

Gly Gly Gly Arg Pro Tyr Thr Pro Ser Pro Gln Val Gly Thr Ile Pro
            500                 505                 510

Glu Arg Pro Gly Trp Ser Gly Thr Pro Ser Pro Gln Gly Ala Glu Met
        515                 520                 525

Arg Gly Gly Arg Ser Pro Arg Pro Gly Ser Ser Ala Pro Glu His Ser
    530                 535                 540

Pro Arg Thr Ser Gly Leu Gly Cys Arg Leu His Ser Ala Pro Asn Leu
545                 550                 555                 560

Ser Asp Leu His Val Val Arg Pro Lys Leu Pro Lys Pro Pro Thr Asp
                565                 570                 575

Pro Leu Gly Ala Val Phe Ser Pro Pro Gln Ala Ser Pro Pro Gln Pro
            580                 585                 590

Ser His Gly Leu Gln Ser Cys Arg Asn Leu Arg Gly Ser Pro Lys Leu
        595                 600                 605

Pro Asp Phe Leu Gln Arg Asn Pro Leu Pro Pro Ile Leu Gly Ser Pro
    610                 615                 620

Thr Lys Ala Val Pro Ser Phe Asp Phe Pro Lys Thr Pro Ser Ser Gln
625                 630                 635                 640

Asn Leu Leu Ala Leu Leu Ala Arg Gln Gly Val Val Met Thr Pro Pro
                645                 650                 655

Arg Asn Arg Thr Leu Pro Asp Leu Ser Glu Val Gly Pro Phe His Gly
```

660 665 670

Gln Pro Leu Gly Pro Gly Leu Arg Pro Gly Glu Asp Pro Lys Gly Pro
675 680 685

Phe Gly Arg Ser Phe Ser Thr Ser Arg Leu Thr Asp Leu Leu Leu Lys
690 695 700

Ala Ala Phe Gly Thr Gln Ala Pro Asp Pro Gly Ser Thr Glu Ser Leu
705 710 715 720

Gln Glu Lys Pro Met Glu Ile Ala Pro Ser Ala Gly Phe Gly Gly Ser
725 730 735

Leu His Pro Gly Ala Arg Ala Gly Gly Thr Ser Ser Pro Ser Pro Val
740 745 750

Val Phe Thr Val Gly Ser Pro Pro Ser Gly Ser Thr Pro Pro Gln Gly
755 760 765

Pro Arg Thr Arg Met Phe Ser Ala Gly Pro Thr Gly Ser Ala Ser Ser
770 775 780

Ser Ala Arg His Leu Val Pro Gly Pro Cys Ser Glu Ala Pro Ala Pro
785 790 795 800

Glu Leu Pro Ala Pro Gly His Gly Cys Ser Phe Ala Asp Pro Ile Ala
805 810 815

Ala Asn Leu Glu Gly Ala Val Thr Phe Glu Ala Pro Asp Leu Pro Glu
820 825 830

Glu Thr Leu Met Glu Gln Glu His Thr Glu Ile Leu Arg Gly Leu Arg
835 840 845

Phe Thr Leu Leu Phe Val Gln His Val Leu Glu Ile Ala Ala Leu Lys
850 855 860

Gly Ser Ala Ser Glu Ala Ala Gly Gly Pro Glu Tyr Gln Leu Gln Glu
865 870 875 880

Ser Val Val Ala Asp Gln Ile Ser Leu Leu Ser Arg Glu Trp Gly Phe
885 890 895

```
Ala Glu Gln Leu Val Leu Tyr Leu Lys Val Ala Glu Leu Leu Ser Ser
            900                 905                 910

Gly Leu Gln Ser Ala Ile Asp Gln Ile Arg Ala Gly Lys Leu Cys Leu
        915                 920                 925

Ser Ser Thr Val Lys Gln Val Val Arg Arg Leu Asn Glu Leu Tyr Lys
    930                 935                 940

Ala Ser Val Val Ser Cys Gln Gly Leu Ser Leu Arg Leu Gln Arg Phe
945                 950                 955                 960

Phe Leu Asp Lys Gln Arg Leu Leu Asp Arg Ile His Ser Ile Thr Ala
                965                 970                 975

Glu Arg Leu Ile Phe Ser His Ala Val Gln Met Val Gln Ser Ala Ala
            980                 985                 990

Leu Asp Glu Met Phe Gln His Arg  Glu Gly Cys Val Pro  Arg Tyr His
        995                 1000                1005

Lys Ala  Leu Leu Leu Leu Glu  Gly Leu Gln His Met  Leu Ser Asp
    1010                1015                1020

Gln Ala  Asp Ile Glu Asn Val  Thr Lys Cys Lys Leu  Cys Ile Glu
    1025                1030                1035

Arg Arg  Leu Ser Ala Leu Leu  Thr Gly Ile Cys Ala
    1040                1045                1050
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<210> 190
<211> 1382
<212> DNA
<213> Homo sapiens

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<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (1235)..(1235)
<223> n is a, c, g, or t

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gggccacgcg ctgtgtgtct gctctcgggg aactgtcatc attgacaata agcgctacct 180

cttcatccag aaactggggg agggtgggtt cagctatgtg gacctagtgg aagggttaca 240

tgatggacac ttctacgccc tgaagcgaat cctgtgtcac gagcagcagg accgggagga 300

ggcccagcga gaagccgaca tgcatcgcct cttcaatcac cccaacatcc ttcgcctcgt 360

ggcttactgt ctgagggaac ggggtgctaa gcatgaggcc tggctgctgc taccattctt 420

caagagaggt acgctgtgga atgagataga aaggctgaag gacaaaggca acttcctgac 480

cgaggatcaa atcctttggc tgctgctggg gatctgcaga ggccttgagg ccattcatgc 540

caagggttat gcccacagag acttgaagcc caccaatata ttgcttggag atgaggggca 600

gccagtttta atggacttgg gttccatgaa tcaagcatgc atccatgtgg agggctcccg 660

ccaggctctg accctgcagg actgggcagc ccagcggtgc accatctcct accgagcccc 720

agagctcttc tctgtgcaga gtcactgtgt catcggtgag cggactgatg tctggtccct 780

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aa 1382

<210> 191
<211> 310
<212> PRT
<213> Homo sapiens

<400> 191

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Met Gly His Ala Leu Cys Val Cys Ser Arg Gly Thr Val Ile Ile Asp
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Asn Lys Arg Tyr Leu Phe Ile Gln Lys Leu Gly Glu Gly Gly Phe Ser
            20                  25                  30

Tyr Val Asp Leu Val Glu Gly Leu His Asp Gly His Phe Tyr Ala Leu
        35                  40                  45

Lys Arg Ile Leu Cys His Glu Gln Gln Asp Arg Glu Glu Ala Gln Arg
    50                  55                  60

Glu Ala Asp Met His Arg Leu Phe Asn His Pro Asn Ile Leu Arg Leu
65                  70                  75                  80

Val Ala Tyr Cys Leu Arg Glu Arg Gly Ala Lys His Glu Ala Trp Leu
                85                  90                  95

Leu Leu Pro Phe Phe Lys Arg Gly Thr Leu Trp Asn Glu Ile Glu Arg
            100                 105                 110

Leu Lys Asp Lys Gly Asn Phe Leu Thr Glu Asp Gln Ile Leu Trp Leu
        115                 120                 125

Leu Leu Gly Ile Cys Arg Gly Leu Glu Ala Ile His Ala Lys Gly Tyr
    130                 135                 140

Ala His Arg Asp Leu Lys Pro Thr Asn Ile Leu Leu Gly Asp Glu Gly
145                 150                 155                 160

Gln Pro Val Leu Met Asp Leu Gly Ser Met Asn Gln Ala Cys Ile His
                165                 170                 175

Val Glu Gly Ser Arg Gln Ala Leu Thr Leu Gln Asp Trp Ala Ala Gln
            180                 185                 190

Arg Cys Thr Ile Ser Tyr Arg Ala Pro Glu Leu Phe Ser Val Gln Ser
        195                 200                 205

His Cys Val Ile Gly Glu Arg Thr Asp Val Trp Ser Leu Gly Cys Val
    210                 215                 220
```

```
Leu Tyr Ala Met Met Phe Gly Glu Gly Pro Tyr Asp Met Val Phe Gln
225                 230                 235                 240

Lys Gly Asp Ser Val Ala Leu Ala Val Gln Asn Gln Leu Ser Ile Pro
                245                 250                 255

Gln Ser Pro Arg His Ser Ser Ala Leu Arg Gln Leu Leu Asn Ser Met
            260                 265                 270

Met Thr Val Asp Pro His Gln Arg Pro His Ile Pro Leu Leu Leu Ser
        275                 280                 285

Gln Leu Glu Ala Leu Gln Pro Pro Ala Pro Gly Gln His Thr Thr Gln
    290                 295                 300

Ile Glu Lys Ala Ala Cys
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<210> 192
<211> 3831
<212> DNA
<213> Homo sapiens

<400> 192

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gcagcagcgg cggcgccgcg gggaccagcg cggacggcgg cgacggagga gagcagctcc    240

tcactgtcaa gcacgagctg cggactgcta atttgacagg acatgctgag aaggtgggaa    300

tagaaaattt tgagctcctg aaggtcctag gaactggagc ttatggaaaa gtatttctag    360

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aacacattag gcagtcgcca tttttggtaa cattacatta tgctttccag acagaaacca    540

aacttcatct cattttagat tatataaatg gtggtgaact ttttactcat ctttctcaaa    600

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aacatctcca caagttgggg attatatatc gtgatattaa gcttgagaat attctacttg    720

attctaatgg ccatgtggtg ctgacagatt ttggtctgag taaggagttt gtggctgatg    780

aaactgaaag agcatattcc ttttgtggaa ctattgaata catggcacca gatattgtca    840
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agatatctag gagaatatta aaaagtgagc ctccatatcc ccaagaaatg agtgctttag 1020

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acactgtgct tcatatttgt acactgtgtt gtactacagt gaggaatttc ctcctgtagt 3600

catatattat gtacataata ttttagaatc atacctatga cttgtttgga aatttttctg 3660

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<211> 809
<212> PRT
<213> Homo sapiens

<400> 193

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Asp Gly Gly Asp Gly Gly Glu Gln Leu Leu Thr Val Lys His Glu Leu

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            20                  25                  30

Arg Thr Ala Asn Leu Thr Gly His Ala Glu Lys Val Gly Ile Glu Asn
        35                  40                  45

Phe Glu Leu Leu Lys Val Leu Gly Thr Gly Ala Tyr Gly Lys Val Phe
    50                  55                  60

Leu Val Arg Lys Ile Ser Gly His Asp Thr Gly Lys Leu Tyr Ala Met
65                  70                  75                  80

Lys Val Leu Lys Lys Ala Thr Ile Val Gln Lys Ala Lys Thr Thr Glu
                85                  90                  95

His Thr Arg Thr Glu Arg Gln Val Leu Glu His Ile Arg Gln Ser Pro
            100                 105                 110

Phe Leu Val Thr Leu His Tyr Ala Phe Gln Thr Glu Thr Lys Leu His
        115                 120                 125

Leu Ile Leu Asp Tyr Ile Asn Gly Gly Glu Leu Phe Thr His Leu Ser
    130                 135                 140

Gln Arg Glu Arg Phe Thr Glu His Glu Val Gln Ile Tyr Val Gly Glu
145                 150                 155                 160

Ile Val Leu Ala Leu Glu His Leu His Lys Leu Gly Ile Ile Tyr Arg
                165                 170                 175

Asp Ile Lys Leu Glu Asn Ile Leu Leu Asp Ser Asn Gly His Val Val
            180                 185                 190

Leu Thr Asp Phe Gly Leu Ser Lys Glu Phe Val Ala Asp Glu Thr Glu
        195                 200                 205

Arg Ala Tyr Ser Phe Cys Gly Thr Ile Glu Tyr Met Ala Pro Asp Ile
    210                 215                 220

Val Arg Gly Gly Asp Ser Gly His Asp Lys Ala Val Asp Trp Trp Ser
225                 230                 235                 240

Leu Gly Val Leu Met Tyr Glu Leu Leu Thr Gly Ala Ser Pro Phe Thr
                245                 250                 255
```

```
Val Asp Gly Glu Lys Asn Ser Gln Ala Glu Ile Ser Arg Arg Ile Leu
            260                 265                 270

Lys Ser Glu Pro Pro Tyr Pro Gln Glu Met Ser Ala Leu Ala Lys Asp
        275                 280                 285

Leu Ile Gln Arg Leu Leu Met Lys Asp Pro Lys Lys Arg Leu Gly Cys
    290                 295                 300

Gly Pro Arg Asp Ala Asp Glu Ile Lys Glu His Leu Phe Phe Gln Lys
305                 310                 315                 320

Ile Asn Trp Asp Asp Leu Ala Ala Lys Lys Val Pro Ala Pro Phe Lys
                325                 330                 335

Pro Val Ile Arg Asp Glu Leu Asp Val Ser Asn Phe Ala Glu Glu Phe
            340                 345                 350

Thr Glu Met Asp Pro Thr Tyr Ser Pro Ala Ala Leu Pro Gln Ser Ser
        355                 360                 365

Glu Lys Leu Phe Gln Gly Tyr Ser Phe Val Ala Pro Ser Ile Leu Phe
    370                 375                 380

Lys Arg Asn Ala Ala Val Ile Asp Pro Leu Gln Phe His Met Gly Val
385                 390                 395                 400

Glu Arg Pro Gly Val Thr Asn Val Ala Arg Ser Ala Met Met Lys Asp
                405                 410                 415

Ser Pro Phe Tyr Gln His Tyr Asp Leu Asp Leu Lys Asp Lys Pro Leu
            420                 425                 430

Gly Glu Gly Ser Phe Ser Ile Cys Arg Lys Cys Val His Lys Lys Ser
        435                 440                 445

Asn Gln Ala Leu Gln Val Lys Ile Ile Ser Lys Arg Met Glu Ala Asn
    450                 455                 460

Thr Gln Lys Glu Ile Thr Ala Leu Lys Leu Cys Glu Gly His Pro Asn
465                 470                 475                 480
```

```
Ile Val Lys Leu His Glu Val Phe His Asp Gln Leu His Thr Phe Leu
                485                 490                 495

Val Met Glu Leu Leu Asn Gly Gly Glu Leu Phe Asp Ala Leu Arg Lys
            500                 505                 510

Lys Lys His Phe Ser Glu Thr Glu Ala Ser Tyr Ile Met Arg Lys Leu
        515                 520                 525

Val Ser Ala Leu Ser His Met His Asp Leu Gly Val Val His Arg Asp
    530                 535                 540

Leu Lys Pro Glu Asn Leu Leu Phe Thr Asp Glu Asn Asp Asn Leu Glu
545                 550                 555                 560

Ile Lys Ile Ile Asp Phe Gly Phe Ala Arg Leu Lys Pro Pro Asp Asn
                565                 570                 575

Gln Pro Leu Lys Thr Pro Cys Phe Thr Leu His Ser Cys Arg Pro Glu
            580                 585                 590

Leu Leu Asn Gln Asn Gly Tyr Asp Glu Ser Cys Asp Leu Trp Ser Leu
        595                 600                 605

Gly Val Ile Leu Tyr Thr Met Leu Ser Gly Gln Val Pro Phe Gln Ser
    610                 615                 620

His Asp Arg Ser Leu Thr Cys Thr Ser Ala Val Glu Ile Met Lys Lys
625                 630                 635                 640

Ile Lys Lys Gly Asp Phe Ser Phe Glu Gly Glu Ala Trp Lys Asn Val
                645                 650                 655

Ser Gln Glu Ala Lys Asp Leu Ile Gln Gly Leu Leu Thr Val Asp Pro
            660                 665                 670

Asn Lys Arg Leu Lys Met Ser Gly Leu Arg Tyr Asn Glu Trp Leu Gln
        675                 680                 685

Asp Gly Ser Gln Leu Ser Ser Asn Pro Leu Met Thr Pro Asp Ile Leu
    690                 695                 700
```

```
Gly Ser Ser Gly Ala Ala Val His Thr Cys Val Lys Ala Thr Phe His
705                 710                 715                 720

Ala Phe Asn Lys Tyr Lys Arg Glu Gly Phe Cys Leu Gln Asn Val Asp
                725                 730                 735

Lys Ala Pro Leu Ala Lys Arg Arg Lys Met Lys Lys Thr Ser Thr Ser
            740                 745                 750

Thr Glu Thr Arg Arg Gly Ser Ser Glu Ser Ser His Ser Ser Ser Ser
        755                 760                 765

His Ser His Gly Lys Thr Thr Pro Thr Lys Thr Leu Gln Pro Ser Asn
    770                 775                 780

Pro Ala Asp Ser Asn Asn Pro Glu Thr Leu Phe Gln Phe Ser Asp Ser
785                 790                 795                 800

Glu Leu Arg His Gly Arg Ser Asp Gln
                805
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<210> 194
<211> 3327
<212> DNA
<213> Homo sapiens

<400> 194

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ggagagcgga gctccgcagc cgggtcgggt cggggcccct cccgggagga gcgtggagcg    120

cggcggcggc ggcggcagca gaaatgatgg aagaattgca tagcctggac ccacgacggc    180

aggaattatt ggaggccagg tttactggag taggtgttag taagggacca cttaatagtg    240

agtcttccaa ccagagcttg tgcagcgtcg gatccttgag tgataaagaa gtagagactc    300

ccgagaaaaa gcagaatgac cagcgaaatc ggaaaagaaa agctgaacca tatgaaacta    360

gccaagggaa aggcactcct aggggacata aaattagtga ttactttgag tttgctgggg    420

gaagcgcgcc aggaaccagc cctggcagaa gtgttccacc agttgcacga tcctcaccgc    480

aacattcctt atccaatccc ttaccgcgac gagtagaaca gcccctctat ggtttagatg    540

gcagtgctgc aaaggaggca acggaggagc agtctgctct gccaaccctc atgtcagtga    600

tgctagcaaa acctcggctt gacacagagc agctggcgca aaggggagct ggcctctgct    660

tcacttttgt ttcagctcag caaaacagtc cctcatctac gggatctggc aacacagagc    720
```

attcctgcag ctcccaaaaa cagatctcca tccagcacag acggacccag tccgacctca 780

caatagaaaa aatatctgca ctagaaaaca gtaagaattc tgacttagag aagaaggagg 840

gaagaataga tgatttatta agagccaact gtgatttgag acggcagatt gatgaacagc 900

aaaagatgct agagaaatac aaggaacgat taaatagatg tgtgacaatg agcaagaaac 960

tccttataga aaagtcaaaa caagagaaga tggcgtgtag agataagagc atgcaagacc 1020

gcttgagact gggccacttt actactgtcc gacacggagc ctcatttact gaacagtgga 1080

cagatggtta tgcttttcag aatcttatca agcaacagga aaggataaat tcacagaggg 1140

aagagataga aagacaacgg aaaatgttag caaagcggaa acctcctgcc atgggtcagg 1200

cccctcctgc aaccaatgag cagaaacagc ggaaaagcaa gaccaatgga gctgaaaatg 1260

aaacgttaac gttagcagaa taccatgaac aagaagaaat cttcaaactc agattaggtc 1320

atcttaaaaa ggaggaagca gagatccagg cagagctgga gagactagaa agggttagaa 1380

atctacatat cagggaacta aaaaggatac ataatgaaga taattcacaa tttaaagatc 1440

atccaacgct aaatgacaga tatttgttgt tacatctttt gggtagagga ggtttcagtg 1500

aagtttacaa ggcatttgat ctaacagagc aaagatacgt agctgtgaaa attcaccagt 1560

taaataaaaa ctggagagat gagaaaaagg agaattacca caagcatgca tgtagggaat 1620

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gtctttcgaa gatcatggat gatgatagct acaattcagt ggatggcatg gagctaacat 1980

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gtgaacttga aaacttgcag actcaggggg gtccctgatg cagtgcttca gatgaagaat 2760

gtggacttga aaatacagac tgggctagtc cagtgtctat atttaaactt gttcttttct 2820

tttaataaag tttaggtaac atctcctgaa aagcttgtag cacaaaggct cagctgggga 2880

tggtgtttga cttcggagga aaaaagttgc tattgcccgt taaaggcact agagttagtg 2940

ttttatccct aaataatttc aatttttaaa aacatgcagc ttccctctcc cctttttttat 3000

ttttgaaaga atacatttgg tcataaagtg aaacccgtat tagcaagtac gaggcaatgt 3060

tcattccaat cagatgcagc tttctcctcc gtctggtctc ctgtttgcaa ttgcttccct 3120

catctcagta gggaaaaaat tgagtgggag tactgagatg tgtgggtttt tgccattgga 3180

caaagaatga ggttagaaga ctgcagcttg gagtctctct aggttttcaa ctatttcttc 3240

acaatttgaa cacttgacgg ttgtcccttt taatttattt gaagtgctat ttttttaaat 3300

aaaggttcat ctgtccatgc aaaaaaa 3327

<210> 195
<211> 749
<212> PRT
<213> Homo sapiens

<400> 195

Met Glu Glu Leu His Ser Leu Asp Pro Arg Arg Gln Glu Leu Leu Glu
1 5 10 15

Ala Arg Phe Thr Gly Val Gly Val Ser Lys Gly Pro Leu Asn Ser Glu
20 25 30

Ser Ser Asn Gln Ser Leu Cys Ser Val Gly Ser Leu Ser Asp Lys Glu
35 40 45

Val Glu Thr Pro Glu Lys Lys Gln Asn Asp Gln Arg Asn Arg Lys Arg
50 55 60

Lys Ala Glu Pro Tyr Glu Thr Ser Gln Gly Lys Gly Thr Pro Arg Gly

```
65                  70                  75                  80

His Lys Ile Ser Asp Tyr Phe Glu Phe Ala Gly Gly Ser Ala Pro Gly
                85                  90                  95

Thr Ser Pro Gly Arg Ser Val Pro Pro Val Ala Arg Ser Ser Pro Gln
            100                 105                 110

His Ser Leu Ser Asn Pro Leu Pro Arg Arg Val Glu Gln Pro Leu Tyr
        115                 120                 125

Gly Leu Asp Gly Ser Ala Ala Lys Glu Ala Thr Glu Glu Gln Ser Ala
    130                 135                 140

Leu Pro Thr Leu Met Ser Val Met Leu Ala Lys Pro Arg Leu Asp Thr
145                 150                 155                 160

Glu Gln Leu Ala Gln Arg Gly Ala Gly Leu Cys Phe Thr Phe Val Ser
                165                 170                 175

Ala Gln Gln Asn Ser Pro Ser Ser Thr Gly Ser Gly Asn Thr Glu His
            180                 185                 190

Ser Cys Ser Ser Gln Lys Gln Ile Ser Ile Gln His Arg Arg Thr Gln
        195                 200                 205

Ser Asp Leu Thr Ile Glu Lys Ile Ser Ala Leu Glu Asn Ser Lys Asn
    210                 215                 220

Ser Asp Leu Glu Lys Lys Glu Gly Arg Ile Asp Asp Leu Leu Arg Ala
225                 230                 235                 240

Asn Cys Asp Leu Arg Arg Gln Ile Asp Glu Gln Gln Lys Met Leu Glu
                245                 250                 255

Lys Tyr Lys Glu Arg Leu Asn Arg Cys Val Thr Met Ser Lys Lys Leu
            260                 265                 270

Leu Ile Glu Lys Ser Lys Gln Glu Lys Met Ala Cys Arg Asp Lys Ser
        275                 280                 285

Met Gln Asp Arg Leu Arg Leu Gly His Phe Thr Thr Val Arg His Gly
    290                 295                 300
```

```
Ala Ser Phe Thr Glu Gln Trp Thr Asp Gly Tyr Ala Phe Gln Asn Leu
305                 310                 315                 320

Ile Lys Gln Gln Glu Arg Ile Asn Ser Gln Arg Glu Glu Ile Glu Arg
                325                 330                 335

Gln Arg Lys Met Leu Ala Lys Arg Lys Pro Pro Ala Met Gly Gln Ala
            340                 345                 350

Pro Pro Ala Thr Asn Glu Gln Lys Gln Arg Lys Ser Lys Thr Asn Gly
        355                 360                 365

Ala Glu Asn Glu Thr Leu Thr Leu Ala Glu Tyr His Glu Gln Glu Glu
    370                 375                 380

Ile Phe Lys Leu Arg Leu Gly His Leu Lys Lys Glu Glu Ala Glu Ile
385                 390                 395                 400

Gln Ala Glu Leu Glu Arg Leu Glu Arg Val Arg Asn Leu His Ile Arg
                405                 410                 415

Glu Leu Lys Arg Ile His Asn Glu Asp Asn Ser Gln Phe Lys Asp His
            420                 425                 430

Pro Thr Leu Asn Asp Arg Tyr Leu Leu Leu His Leu Leu Gly Arg Gly
        435                 440                 445

Gly Phe Ser Glu Val Tyr Lys Ala Phe Asp Leu Thr Glu Gln Arg Tyr
    450                 455                 460

Val Ala Val Lys Ile His Gln Leu Asn Lys Asn Trp Arg Asp Glu Lys
465                 470                 475                 480

Lys Glu Asn Tyr His Lys His Ala Cys Arg Glu Tyr Arg Ile His Lys
                485                 490                 495

Glu Leu Asp His Pro Arg Ile Val Lys Leu Tyr Asp Tyr Phe Ser Leu
            500                 505                 510

Asp Thr Asp Ser Phe Cys Thr Val Leu Glu Tyr Cys Glu Gly Asn Asp
        515                 520                 525
```

```
Leu Asp Phe Tyr Leu Lys Gln His Lys Leu Met Ser Glu Lys Glu Ala
    530                 535                 540

Arg Ser Ile Ile Met Gln Ile Val Asn Ala Leu Lys Tyr Leu Asn Glu
545                 550                 555                 560

Ile Lys Pro Pro Ile Ile His Tyr Asp Leu Lys Pro Gly Asn Ile Leu
                565                 570                 575

Leu Val Asn Gly Thr Ala Cys Gly Glu Ile Lys Ile Thr Asp Phe Gly
            580                 585                 590

Leu Ser Lys Ile Met Asp Asp Asp Ser Tyr Asn Ser Val Asp Gly Met
        595                 600                 605

Glu Leu Thr Ser Gln Gly Ala Gly Thr Tyr Trp Tyr Leu Pro Pro Glu
    610                 615                 620

Cys Phe Val Val Gly Lys Glu Pro Pro Lys Ile Ser Asn Lys Val Asp
625                 630                 635                 640

Val Trp Ser Val Gly Val Ile Phe Tyr Gln Cys Leu Tyr Gly Arg Lys
                645                 650                 655

Pro Phe Gly His Asn Gln Ser Gln Gln Asp Ile Leu Gln Glu Asn Thr
            660                 665                 670

Ile Leu Lys Ala Thr Glu Val Gln Phe Pro Pro Lys Pro Val Val Thr
        675                 680                 685

Pro Glu Ala Lys Ala Phe Ile Arg Arg Cys Leu Ala Tyr Arg Lys Arg
    690                 695                 700

Asp Arg Ile Asp Val Gln Gln Leu Ala Cys Asp Pro Tyr Leu Leu Pro
705                 710                 715                 720

His Ile Arg Lys Ser Val Ser Thr Ser Ser Pro Ala Gly Ala Ala Ile
                725                 730                 735

Ala Ser Thr Ser Gly Ala Ser Asn Asn Ser Ser Ser Asn
            740                 745
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<210> 196
<211> 2221
<212> DNA
<213> Homo sapiens

<400> 196
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cgtgacgcca gcgtcaggcc agccccggca tgctctgcgg ccgcccgcgg tccagctccg 120

acaacaggaa ttttctccga gagcgggccg ggctcagttc agctgctgtc cagacccgga 180

tcggcaacag tgccgcctcc agacgttctc ctgccgctcg cccgcccgtc ccagcgcccc 240

cagccctccc gcgagggcgc cccgggacgg aaggatccac cagtctgtcg gcgcccgccg 300

ttctcgtggt cgccgtcgcc gtcgtcgtgg tggtagtctc cgccgtcgcc tgggccatgg 360

ccaattacat ccacgtccct cccggctccc cggaggtgcc caagctgaac gtcaccgttc 420

aggatcagga ggagcatcgc tgccgggagg gggccctgag cctcctgcaa cacctgcggc 480

ctcactggga cccccaggag gtgaccctgc agctcttcac agatggaatc acaaataaac 540

ttattggctg ttacgtggga aacaccatgg aggatgtagt cctggtgaga atttatggca 600

ataagactga gttattagtc gatcgagatg aggaagtaaa gagttttcga gtgttgcagg 660

ctcatgggtg tgcaccacaa ctctactgta ccttcaataa tggactatgc tatgaattta 720

tacaaggaga agcactggat ccaaagcatg tctgcaaccc agccattttc aggctaatag 780

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atctttggct aaagatggga aagtatttct ctctcattcc cacaggattt gcagatgaag 900

acattaataa aaggttccta agtgatatcc caagctctca gattctccag gaagagatga 960

cttggatgaa ggagattctt tccaacctgg gctcacctgt tgtgctttgc cataatgacc 1020

tattgtgtaa gaatataatc tacaatgaga aacaaggtga tgtacagttc attgattatg 1080

aatattctgg atacaactac ctggcatatg atattggaaa tcatttcaat gaatttgcag 1140

gtgtgagtga tgtagactat agtctgtatc cagatagaga actacagagt cagtggctgc 1200

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caattgttcg ttttaaccag tactttaaaa tgaagcctga ggttactgca ttaaaagtgc 1440

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ttaagaaatc ccaaaaagcc aatattagtt aaaattctgt tgtttaattt ggttatcttg 1560

ctttataaat tatgcctcta aacaatcaaa tctatttttg aaatagactg aatgatgtca 1620

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gtataaagat gtcagtttaa tttctttgat aatttaacct atgttgtatg tgaattattt 1740

attataaact tagcacgatt ctgtgactgt ttttctctgt ttcacgttcg ttgagtgtaa 1800

gcaatgaaaa tgtcccaaat aagtttttta agttttactt taataagatt aatttcagta 1860

aacattctag ttgttcagtg taacctttt atcttgatgc attgtaagta aaatgaatca 1920

tttactcttg aaatgccagt cattgactga tgtagataat ttaggatttt catataaaaa 1980

tagctgttta ggaaggtgaa atacattcac tgtctctgtt ggtggtacat cttgttgaat 2040

tcaatattag aaagtatttc tttttggggt aatataactt agaattaaat ccctgtttct 2100

ctatgtagtc tggcagtata aatataaata tttaccatat aatcttggaa taagtattag 2160

ttaatgttac caaaatctgt attaaataat gttttcaaat gctaaaaaaa aaaaaaaaaa 2220

a 2221

<210> 197
<211> 452
<212> PRT
<213> Homo sapiens

<400> 197

Met Leu Cys Gly Arg Pro Arg Ser Ser Ser Asp Asn Arg Asn Phe Leu
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Arg Glu Arg Ala Gly Leu Ser Ser Ala Ala Val Gln Thr Arg Ile Gly
20 25 30

Asn Ser Ala Ala Ser Arg Arg Ser Pro Ala Ala Arg Pro Pro Val Pro
35 40 45

Ala Pro Pro Ala Leu Pro Arg Gly Arg Pro Gly Thr Glu Gly Ser Thr
50 55 60

Ser Leu Ser Ala Pro Ala Val Leu Val Val Ala Val Ala Val Val Val
65 70 75 80

Val Val Val Ser Ala Val Ala Trp Ala Met Ala Asn Tyr Ile His Val
85 90 95

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Pro Pro Gly Ser Pro Glu Val Pro Lys Leu Asn Val Thr Val Gln Asp
            100                 105                 110

Gln Glu Glu His Arg Cys Arg Glu Gly Ala Leu Ser Leu Leu Gln His
        115                 120                 125

Leu Arg Pro His Trp Asp Pro Gln Glu Val Thr Leu Gln Leu Phe Thr
    130                 135                 140

Asp Gly Ile Thr Asn Lys Leu Ile Gly Cys Tyr Val Gly Asn Thr Met
145                 150                 155                 160

Glu Asp Val Val Leu Val Arg Ile Tyr Gly Asn Lys Thr Glu Leu Leu
                165                 170                 175

Val Asp Arg Asp Glu Glu Val Lys Ser Phe Arg Val Leu Gln Ala His
            180                 185                 190

Gly Cys Ala Pro Gln Leu Tyr Cys Thr Phe Asn Asn Gly Leu Cys Tyr
        195                 200                 205

Glu Phe Ile Gln Gly Glu Ala Leu Asp Pro Lys His Val Cys Asn Pro
    210                 215                 220

Ala Ile Phe Arg Leu Ile Ala Arg Gln Leu Ala Lys Ile His Ala Ile
225                 230                 235                 240

His Ala His Asn Gly Trp Ile Pro Lys Ser Asn Leu Trp Leu Lys Met
                245                 250                 255

Gly Lys Tyr Phe Ser Leu Ile Pro Thr Gly Phe Ala Asp Glu Asp Ile
            260                 265                 270

Asn Lys Arg Phe Leu Ser Asp Ile Pro Ser Ser Gln Ile Leu Gln Glu
        275                 280                 285

Glu Met Thr Trp Met Lys Glu Ile Leu Ser Asn Leu Gly Ser Pro Val
    290                 295                 300

Val Leu Cys His Asn Asp Leu Leu Cys Lys Asn Ile Ile Tyr Asn Glu
305                 310                 315                 320

Lys Gln Gly Asp Val Gln Phe Ile Asp Tyr Glu Tyr Ser Gly Tyr Asn
```

325 330 335

Tyr Leu Ala Tyr Asp Ile Gly Asn His Phe Asn Glu Phe Ala Gly Val
340 345 350

Ser Asp Val Asp Tyr Ser Leu Tyr Pro Asp Arg Glu Leu Gln Ser Gln
355 360 365

Trp Leu Arg Ala Tyr Leu Glu Ala Tyr Lys Glu Phe Lys Gly Phe Gly
370 375 380

Thr Glu Val Thr Glu Lys Glu Val Glu Ile Leu Phe Ile Gln Val Asn
385 390 395 400

Gln Phe Ala Leu Ala Ser His Phe Phe Trp Gly Leu Trp Ala Leu Ile
405 410 415

Gln Ala Lys Tyr Ser Thr Ile Glu Phe Asp Phe Leu Gly Tyr Ala Ile
420 425 430

Val Arg Phe Asn Gln Tyr Phe Lys Met Lys Pro Glu Val Thr Ala Leu
435 440 445

Lys Val Pro Glu
450

<210> 198
<211> 2745
<212> DNA
<213> Homo sapiens

<400> 198
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gacaccaact tcctgacagg agctttattt catttgggat ttcaagttta cagatggtat 180

cttctcaaaa gttggaaaaa cctatagaga tgggcagtag cgaacccctt cccatcgcag 240

atggtgacag gaggaggaag aagaagcgga ggggccgggc cactgactcc ttgccaggaa 300

agtttgaaga tatgtacaag ctgacctctg aattgcttgg agagggagcc tatgccaaag 360

ttcaaggtgc cgtgagccta cagaatggca aagagtatgc cgtcaaaatc atcgagaaac 420

aagcagggca cagtcggagt agggtgtttc gagaggtgga gacgctgtat cagtgtcagg 480

gaaacaagaa cattttggag ctgattgagt tctttgaaga tgacacaagg ttttacttgg 540

tctttgagaa attgcaagga ggttccatct tagcccacat ccagaagcaa aagcacttca 600

atgagcgaga agccagccga gtggtgcggg acgttgctgc tgcccttgac ttcctgcata 660

ccaaagacaa agtctctctc tgtcacctag gctggagtgc tatggcgcca tcagggctca 720

ctgcagcccc aacctccctg ggctccagtg atcctcccac ctcagcctcc caagtagctg 780

ggactacagg cattgctcat cgtgatctga aaccagaaaa tatattgtgt gaatctccag 840

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actcctgtac ccccataacc acaccagagc tgaccacccc atgtggctct gcagaataca 960

tggcccctga ggtagtggag gtcttcacgg accaggccac attctacgac aagcgctgtg 1020

acctgtggag cctgggcgtg gtcctctaca tcatgctgag tggctaccca cccttcgtgg 1080

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cactttgcat aattgcctgc agcaggaaca tctcttcact gggctccacc tgctcacccg 1860

cctgcagatc tgggatccag cctgctctca ccgctgtagc tgtggcggct ggggctgcag 1920

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gctgctaaag tcagtagtat cgtttttta aaaaaaaagt ttggtgtttt taaccatgct 2280

gttccagcaa agatgatacc ttaaactccc actgcaagcc catgaacttc ccagagagtg 2340

gaacggcttg ctcttctttc tagaatgtcc atgcacttgg gttttaatca gcagttccct 2400

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tgcccgtgtg catgaaggta cagccattca gataagtgga actattgagt tacataaaga 2640

aaatagattt gcatttgtca ggcagacgtt tatacaacac cacggtgctt ttatacattg 2700

tgcttatttt aataaaactg aaattctaaa aaaaaaaaaa aaaaa 2745

<210> 199
<211> 465
<212> PRT
<213> Homo sapiens

<400> 199

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Glu Pro Leu Pro Ile Ala Asp Gly Asp Arg Arg Arg Lys Lys Lys Arg
20 25 30

Arg Gly Arg Ala Thr Asp Ser Leu Pro Gly Lys Phe Glu Asp Met Tyr
35 40 45

Lys Leu Thr Ser Glu Leu Leu Gly Glu Gly Ala Tyr Ala Lys Val Gln
50 55 60

Gly Ala Val Ser Leu Gln Asn Gly Lys Glu Tyr Ala Val Lys Ile Ile
65 70 75 80

Glu Lys Gln Ala Gly His Ser Arg Ser Arg Val Phe Arg Glu Val Glu
85 90 95

Thr Leu Tyr Gln Cys Gln Gly Asn Lys Asn Ile Leu Glu Leu Ile Glu
100 105 110

Phe Phe Glu Asp Asp Thr Arg Phe Tyr Leu Val Phe Glu Lys Leu Gln
115 120 125

```
Gly Gly Ser Ile Leu Ala His Ile Gln Lys Gln Lys His Phe Asn Glu
    130                 135                 140

Arg Glu Ala Ser Arg Val Val Arg Asp Val Ala Ala Ala Leu Asp Phe
145                 150                 155                 160

Leu His Thr Lys Asp Lys Val Ser Leu Cys His Leu Gly Trp Ser Ala
                165                 170                 175

Met Ala Pro Ser Gly Leu Thr Ala Ala Pro Thr Ser Leu Gly Ser Ser
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Asp Pro Pro Thr Ser Ala Ser Gln Val Ala Gly Thr Thr Gly Ile Ala
        195                 200                 205

His Arg Asp Leu Lys Pro Glu Asn Ile Leu Cys Glu Ser Pro Glu Lys
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Val Ser Pro Val Lys Ile Cys Asp Phe Asp Leu Gly Ser Gly Met Lys
225                 230                 235                 240

Leu Asn Asn Ser Cys Thr Pro Ile Thr Thr Pro Glu Leu Thr Thr Pro
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Cys Gly Ser Ala Glu Tyr Met Ala Pro Glu Val Val Glu Val Phe Thr
            260                 265                 270

Asp Gln Ala Thr Phe Tyr Asp Lys Arg Cys Asp Leu Trp Ser Leu Gly
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Val Val Leu Tyr Ile Met Leu Ser Gly Tyr Pro Pro Phe Val Gly His
    290                 295                 300

Cys Gly Ala Asp Cys Gly Trp Asp Arg Gly Glu Val Cys Arg Val Cys
305                 310                 315                 320

Gln Asn Lys Leu Phe Glu Ser Ile Gln Glu Gly Lys Tyr Glu Phe Pro
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Asp Lys Asp Trp Ala His Ile Ser Ser Glu Ala Lys Asp Leu Ile Ser
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Lys Leu Leu Val Arg Asp Ala Lys Gln Arg Leu Ser Ala Ala Gln Val
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Thr Pro Gln Val Leu Gln Arg Asn Ser Ser Thr Met Asp Leu Thr Leu
385                 390                 395                 400

Phe Ala Ala Glu Ala Ile Ala Leu Asn Arg Gln Leu Ser Gln His Glu
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Glu Asn Glu Leu Ala Glu Glu Pro Glu Ala Leu Ala Asp Gly Leu Cys
            420                 425                 430

Ser Met Lys Leu Ser Pro Pro Cys Lys Ser Arg Leu Ala Arg Arg Arg
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Lys Asn Gly Phe Leu Gln Tyr Asp Val Leu Glu Ala Leu Asn Met Glu
50 55 60

Lys Met Met Ser Ala Ile Ser Cys Trp Met Glu Ser Ala Arg His Ser
65 70 75 80

Val Val Ser Thr Asp Gln Glu Ser Ala Glu Glu Ile Pro Ile Leu Ile
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Ile Glu Gly Phe Leu Leu Phe Asn Tyr Lys Pro Leu Asp Thr Ile Trp
100 105 110

Asn Arg Ser Tyr Phe Leu Thr Ile Pro Tyr Glu Glu Cys Lys Arg Arg
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Arg Ser Thr Arg Val Tyr Gln Pro Pro Asp Ser Pro Gly Tyr Phe Asp
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Gly His Val Trp Pro Met Tyr Leu Lys Tyr Arg Gln Glu Met Gln Asp
145 150 155 160

Ile Thr Trp Glu Val Val Tyr Leu Asp Gly Thr Lys Ser Glu Glu Asp
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Ile Phe Pro His Val Val His Gly Phe Leu Asp Thr Asn Pro Ala Ile
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Arg Glu Gln Thr Val Lys Ser Met Leu Leu Leu Ala Pro Lys Leu Asn
    50                  55                  60

Glu Ala Asn Leu Asn Val Glu Leu Met Lys His Phe Ala Arg Leu Gln
65                  70                  75                  80

Ala Lys Asp Glu Gln Gly Pro Ile Arg Cys Asn Thr Thr Val Cys Leu
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Gly Lys Ile Gly Ser Tyr Leu Ser Ala Ser Thr Arg His Arg Val Leu
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Thr Ser Ala Phe Ser Arg Ala Thr Arg Asp Pro Phe Ala Pro Ser Arg
        115                 120                 125

Val Ala Gly Val Leu Gly Phe Ala Ala Thr His Asn Leu Tyr Ser Met
    130                 135                 140

Asn Asp Cys Ala Gln Lys Ile Leu Pro Val Leu Cys Gly Leu Thr Val
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Asp Pro Glu Lys Ser Val Arg Asp Gln Ala Phe Lys Ala Phe Arg Ser
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Phe Leu Ser Lys Leu Glu Ser Val Ser Glu Asp Pro Thr Gln Leu Glu
            180                 185                 190

Glu Val Glu Lys Asp Val His Ala Ala Ser Ser Pro Gly Met Gly Gly
        195                 200                 205

Ala Ala Ala Ser Trp Ala Gly Trp Ala Trp Thr Gly Val Ser Ser Leu
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Thr Ser Lys Leu Ile Arg Ser His Pro Thr Thr Ala Pro Thr Glu Thr
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gagggaagtc agagccccag ggcgccacga agcagccact gggatacccc accccgcccc 6240

gccctgcccc ccccccccc caccagtcct gcccccgcat ggagcccccg tgattagtag 6300

cccgtatgat cacgtagacc cacccaacac actcctgcac actggccccg gcccacggca 6360

cagcaatccc ctgcgcgtgg atttcacctc acccttttgta ccagatgttg agtgaccagc 6420

tctgtggccc tgtgtcgtca gaggcttgtg attaactgtg gcggcagaca cagcttgtcc 6480

acagcttggg ccaggcttcc cctgtcctcc caccggtcgg ctgcttggca aggctgttca 6540

ggacgtgcac ttccccaagt cggcactgag tggcccagca ccgcctagcc ctgccacccc 6600

actgccctcc tgggccttct gctggatggg cacctggggg gttctggttt ttacttttt 6660

aatgtaagtc tcagtctttg taattaatta ttgaattgtg agaacatttt tgaacaattt 6720

acctgtcaat aaagcagaag acggcagttt taaagttaaa aaaaaaaaaa aaaaaaaaaa 6780

aa 6782

<210> 206
<211> 1711
<212> PRT
<213> Homo sapiens

<400> 206

Met Ser Ala Lys Val Arg Leu Lys Lys Leu Glu Gln Leu Leu Leu Asp
1 5 10 15

Gly Pro Trp Arg Asn Glu Ser Ala Leu Ser Val Glu Thr Leu Leu Asp
20 25 30

Val Leu Val Cys Leu Tyr Thr Glu Cys Ser His Ser Ala Leu Arg Arg
35 40 45

Asp Lys Tyr Val Ala Glu Phe Leu Glu Trp Ala Lys Pro Phe Thr Gln
50 55 60

Leu Val Lys Glu Met Gln Leu His Arg Glu Asp Phe Glu Ile Ile Lys
65 70 75 80

Val Ile Gly Arg Gly Ala Phe Gly Glu Val Ala Val Val Lys Met Lys
85 90 95

Asn Thr Glu Arg Ile Tyr Ala Met Lys Ile Leu Asn Lys Trp Glu Met
100 105 110

Leu Lys Arg Ala Glu Thr Ala Cys Phe Arg Glu Glu Arg Asp Val Leu
115 120 125

Val Asn Gly Asp Cys Gln Trp Ile Thr Ala Leu His Tyr Ala Phe Gln

```
    130                 135                 140

Asp Glu Asn His Leu Tyr Leu Val Met Asp Tyr Tyr Val Gly Gly Asp
145                 150                 155                 160

Leu Leu Thr Leu Leu Ser Lys Phe Glu Asp Lys Leu Pro Glu Asp Met
                165                 170                 175

Ala Arg Phe Tyr Ile Gly Glu Met Val Leu Ala Ile Asp Ser Ile His
            180                 185                 190

Gln Leu His Tyr Val His Arg Asp Ile Lys Pro Asp Asn Val Leu Leu
        195                 200                 205

Asp Val Asn Gly His Ile Arg Leu Ala Asp Phe Gly Ser Cys Leu Lys
    210                 215                 220

Met Asn Asp Asp Gly Thr Val Gln Ser Ser Val Ala Val Gly Thr Pro
225                 230                 235                 240

Asp Tyr Ile Ser Pro Glu Ile Leu Gln Ala Met Glu Asp Gly Met Gly
                245                 250                 255

Lys Tyr Gly Pro Glu Cys Asp Trp Trp Ser Leu Gly Val Cys Met Tyr
            260                 265                 270

Glu Met Leu Tyr Gly Glu Thr Pro Phe Tyr Ala Glu Ser Leu Val Glu
        275                 280                 285

Thr Tyr Gly Lys Ile Met Asn His Glu Glu Arg Phe Gln Phe Pro Ser
    290                 295                 300

His Val Thr Asp Val Ser Glu Glu Ala Lys Asp Leu Ile Gln Arg Leu
305                 310                 315                 320

Ile Cys Ser Arg Glu Arg Arg Leu Gly Gln Asn Gly Ile Glu Asp Phe
                325                 330                 335

Lys Lys His Ala Phe Phe Glu Gly Leu Asn Trp Glu Asn Ile Arg Asn
            340                 345                 350

Leu Glu Ala Pro Tyr Ile Pro Asp Val Ser Ser Pro Ser Asp Thr Ser
        355                 360                 365
```

```
Asn Phe Asp Val Asp Asp Asp Val Leu Arg Asn Thr Glu Ile Leu Pro
    370                 375                 380

Pro Gly Ser His Thr Gly Phe Ser Gly Leu His Leu Pro Phe Ile Gly
385                 390                 395                 400

Phe Thr Phe Thr Thr Glu Ser Cys Phe Ser Asp Arg Gly Ser Leu Lys
                405                 410                 415

Ser Ile Met Gln Ser Asn Thr Leu Thr Lys Asp Glu Asp Val Gln Arg
            420                 425                 430

Asp Leu Glu His Ser Leu Gln Met Glu Ala Tyr Glu Arg Arg Ile Arg
        435                 440                 445

Arg Leu Glu Gln Glu Lys Leu Glu Leu Ser Arg Lys Leu Gln Glu Ser
    450                 455                 460

Thr Gln Thr Val Gln Ser Leu His Gly Ser Ser Arg Ala Leu Ser Asn
465                 470                 475                 480

Ser Asn Arg Asp Lys Glu Ile Lys Lys Leu Asn Glu Glu Ile Glu Arg
                485                 490                 495

Leu Lys Asn Lys Ile Ala Asp Ser Asn Arg Leu Glu Arg Gln Leu Glu
            500                 505                 510

Asp Thr Val Ala Leu Arg Gln Glu Arg Glu Asp Ser Thr Gln Arg Leu
        515                 520                 525

Arg Gly Leu Glu Lys Gln His Arg Val Val Arg Gln Glu Lys Glu Glu
    530                 535                 540

Leu His Lys Gln Leu Val Glu Ala Ser Glu Arg Leu Lys Ser Gln Ala
545                 550                 555                 560

Lys Glu Leu Lys Asp Ala His Gln Gln Arg Lys Leu Ala Leu Gln Glu
                565                 570                 575

Phe Ser Glu Leu Asn Glu Arg Met Ala Glu Leu Arg Ala Gln Lys Gln
            580                 585                 590
```

```
Lys Val Ser Arg Gln Leu Arg Asp Lys Glu Glu Glu Met Glu Val Ala
        595                 600                 605

Thr Gln Lys Val Asp Ala Met Arg Gln Glu Met Arg Arg Ala Glu Lys
    610                 615                 620

Leu Arg Lys Glu Leu Glu Ala Gln Leu Asp Asp Ala Val Ala Glu Ala
625                 630                 635                 640

Ser Lys Glu Arg Lys Leu Arg Glu His Ser Glu Asn Phe Cys Lys Gln
                645                 650                 655

Met Glu Ser Glu Leu Glu Ala Leu Lys Val Lys Gln Gly Gly Arg Gly
            660                 665                 670

Ala Gly Ala Thr Leu Glu His Gln Gln Glu Ile Ser Lys Ile Lys Ser
        675                 680                 685

Glu Leu Glu Lys Lys Val Leu Phe Tyr Glu Glu Glu Leu Val Arg Arg
    690                 695                 700

Glu Ala Ser His Val Leu Glu Val Lys Asn Val Lys Lys Glu Val His
705                 710                 715                 720

Asp Ser Glu Ser His Gln Leu Ala Leu Gln Lys Glu Ile Leu Met Leu
                725                 730                 735

Lys Asp Lys Leu Glu Lys Ser Lys Arg Glu Arg His Asn Glu Met Glu
            740                 745                 750

Glu Ala Val Gly Thr Ile Lys Asp Lys Tyr Glu Arg Glu Arg Ala Met
        755                 760                 765

Leu Phe Asp Glu Asn Lys Lys Leu Thr Ala Glu Asn Glu Lys Leu Cys
    770                 775                 780

Ser Phe Val Asp Lys Leu Thr Ala Gln Asn Arg Gln Leu Glu Asp Glu
785                 790                 795                 800

Leu Gln Asp Leu Ala Ala Lys Lys Glu Ser Val Ala His Trp Glu Ala
                805                 810                 815
```

```
Gln Ile Ala Glu Ile Ile Gln Trp Val Ser Asp Glu Lys Asp Ala Arg
            820                 825                 830

Gly Tyr Leu Gln Ala Leu Ala Ser Lys Met Thr Glu Glu Leu Glu Ala
        835                 840                 845

Leu Arg Ser Ser Ser Leu Gly Ser Arg Thr Leu Asp Pro Leu Trp Lys
    850                 855                 860

Val Arg Arg Ser Gln Lys Leu Asp Met Ser Ala Arg Leu Glu Leu Gln
865                 870                 875                 880

Ser Ala Leu Glu Ala Glu Ile Arg Ala Lys Gln Leu Val Gln Glu Glu
                885                 890                 895

Leu Arg Lys Val Lys Asp Ala Asn Leu Thr Leu Glu Ser Lys Leu Lys
            900                 905                 910

Asp Ser Glu Ala Lys Asn Arg Glu Leu Leu Glu Glu Met Glu Ile Leu
        915                 920                 925

Lys Lys Lys Met Glu Glu Lys Phe Arg Ala Asp Thr Gly Leu Lys Leu
    930                 935                 940

Pro Asp Phe Gln Asp Ser Ile Phe Glu Tyr Phe Asn Thr Ala Pro Leu
945                 950                 955                 960

Ala His Asp Leu Thr Phe Arg Thr Ser Ser Ala Ser Glu Gln Glu Thr
                965                 970                 975

Gln Ala Pro Lys Pro Glu Ala Ser Pro Ser Met Ser Val Ala Ala Ser
            980                 985                 990

Glu Gln Gln Glu Asp Met Ala Arg  Pro Pro Gln Arg Pro  Ser Ala Val
        995                 1000                1005

Pro Leu  Pro Thr Thr Gln Ala  Leu Ala Leu Ala Gly  Pro Lys Pro
    1010                1015                1020

Lys Ala  His Gln Phe Ser Ile  Lys Ser Phe Ser Ser  Pro Thr Gln
    1025                1030                1035

Cys Ser  His Cys Thr Ser Leu  Met Val Gly Leu Ile  Arg Gln Gly
```

```
    1040                1045                1050

Tyr Ala  Cys Glu Val Cys Ser  Phe Ala Cys His Val  Ser Cys Lys
    1055                1060                1065

Asp Gly  Ala Pro Gln Val Cys  Pro Ile Pro Pro Glu  Gln Ser Lys
    1070                1075                1080

Arg Pro  Leu Gly Val Asp Val  Gln Arg Gly Ile Gly  Thr Ala Tyr
    1085                1090                1095

Lys Gly  His Val Lys Val Pro  Lys Pro Thr Gly Val  Lys Lys Gly
    1100                1105                1110

Trp Gln  Arg Ala Tyr Ala Val  Val Cys Glu Cys Lys  Leu Phe Leu
    1115                1120                1125

Tyr Asp  Leu Pro Glu Gly Lys  Ser Thr Gln Pro Gly  Val Ile Ala
    1130                1135                1140

Ser Gln  Val Leu Asp Leu Arg  Asp Asp Glu Phe Ser  Val Ser Ser
    1145                1150                1155

Val Leu  Ala Ser Asp Val Ile  His Ala Thr Arg Arg  Asp Ile Pro
    1160                1165                1170

Cys Ile  Phe Arg Val Thr Ala  Ser Leu Leu Gly Ala  Pro Ser Lys
    1175                1180                1185

Thr Ser  Ser Leu Leu Ile Leu  Thr Glu Asn Glu Asn  Glu Lys Arg
    1190                1195                1200

Lys Trp  Val Gly Ile Leu Glu  Gly Leu Gln Ser Ile  Leu His Lys
    1205                1210                1215

Asn Arg  Leu Arg Asn Gln Val  Val His Val Pro Leu  Glu Ala Tyr
    1220                1225                1230

Asp Ser  Ser Leu Pro Leu Ile  Lys Ala Ile Leu Thr  Ala Ala Ile
    1235                1240                1245

Val Asp  Ala Asp Arg Ile Ala  Val Gly Leu Glu Glu  Gly Leu Tyr
    1250                1255                1260
```

```
Val Ile  Glu Val Thr Arg Asp  Val Ile Val Arg Ala  Ala Asp Cys
    1265                1270                1275

Lys Lys  Val His Gln Ile Glu  Leu Ala Pro Arg Glu  Lys Ile Val
    1280                1285                1290

Ile Leu  Leu Cys Gly Arg Asn  His His Val His Leu  Tyr Pro Trp
    1295                1300                1305

Ser Ser  Leu Asp Gly Ala Glu  Gly Ser Phe Asp Ile  Lys Leu Pro
    1310                1315                1320

Glu Thr  Lys Gly Cys Gln Leu  Met Ala Thr Ala Thr  Leu Lys Arg
    1325                1330                1335

Asn Ser  Gly Thr Cys Leu Phe  Val Ala Val Lys Arg  Leu Ile Leu
    1340                1345                1350

Cys Tyr  Glu Ile Gln Arg Thr  Lys Pro Phe His Arg  Lys Phe Asn
    1355                1360                1365

Glu Ile  Val Ala Pro Gly Ser  Val Gln Cys Leu Ala  Val Leu Arg
    1370                1375                1380

Asp Arg  Leu Cys Val Gly Tyr  Pro Ser Gly Phe Cys  Leu Leu Ser
    1385                1390                1395

Ile Gln  Gly Asp Gly Gln Pro  Leu Asn Leu Val Asn  Pro Asn Asp
    1400                1405                1410

Pro Ser  Leu Ala Phe Leu Ser  Gln Gln Ser Phe Asp  Ala Leu Cys
    1415                1420                1425

Ala Val  Glu Leu Glu Ser Glu  Glu Tyr Leu Leu Cys  Phe Ser His
    1430                1435                1440

Met Gly  Leu Tyr Val Asp Pro  Gln Gly Arg Arg Ala  Arg Ala Gln
    1445                1450                1455

Glu Leu  Met Trp Pro Ala Ala  Pro Val Ala Cys Ser  Cys Ser Pro
    1460                1465                1470
```

```
Thr His  Val Thr Val Tyr Ser  Glu Tyr Gly Val Asp  Val Phe Asp
    1475                 1480                 1485

Val Arg  Thr Met Glu Trp Val  Gln Thr Ile Gly Leu  Arg Arg Ile
    1490                 1495                 1500

Arg Pro  Leu Asn Ser Glu Gly  Thr Leu Asn Leu Leu  Asn Cys Glu
    1505                 1510                 1515

Pro Pro  Arg Leu Ile Tyr Phe  Lys Ser Lys Phe Ser  Gly Ala Val
    1520                 1525                 1530

Leu Asn  Val Pro Asp Thr Ser  Asp Asn Ser Lys Lys  Gln Met Leu
    1535                 1540                 1545

Arg Thr  Arg Ser Lys Arg Arg  Phe Val Phe Lys Val  Pro Glu Glu
    1550                 1555                 1560

Glu Arg  Leu Gln Gln Arg Arg  Glu Met Leu Arg Asp  Pro Glu Leu
    1565                 1570                 1575

Arg Ser  Lys Met Ile Ser Asn  Pro Thr Asn Phe Asn  His Val Ala
    1580                 1585                 1590

His Met  Gly Pro Gly Asp Gly  Met Gln Val Leu Met  Asp Leu Pro
    1595                 1600                 1605

Leu Ser  Ala Val Pro Pro Ser  Gln Glu Glu Arg Pro  Gly Pro Ala
    1610                 1615                 1620

Pro Thr  Asn Leu Ala Arg Gln  Pro Pro Ser Arg Asn  Lys Pro Tyr
    1625                 1630                 1635

Ile Ser  Trp Pro Ser Ser Gly  Gly Ser Glu Pro Ser  Val Thr Val
    1640                 1645                 1650

Pro Leu  Arg Ser Met Ser Asp  Pro Asp Gln Asp Phe  Asp Lys Glu
    1655                 1660                 1665

Pro Asp  Ser Asp Ser Thr Lys  His Ser Thr Pro Ser  Asn Ser Ser
    1670                 1675                 1680
```

Asn Pro Ser Gly Pro Pro Ser Pro Asn Ser Pro His Arg Ser Gln
1685 1690 1695

Leu Pro Leu Glu Gly Leu Glu Gln Pro Ala Cys Asp Thr
1700 1705 1710

<210> 207
<211> 1196
<212> DNA
<213> Homo sapiens

<400> 207
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cggtggtagt ggtgggctcc tgcatgaccg acctggtcag tcttacttct cgtttgccaa 120

aaactggaga aaccatccat ggacataagt tttttattgg ctttggaggg aaaggtgcca 180

accagtgtgt ccaagctgct cggcttggag caatgacgtc catggtgtgt aaggttggca 240

aagattcttt tggcaatgat tatatagaaa acttaaaaca gaatgatatt tctacagaat 300

ttacatatca gactaaagat gctgctacag gaactgcttc tataattgtc aataatgaag 360

gccagaatat cattgtcata gtggctggag caaatttact tttgaatacg gaggatctga 420

gggcagcagc caatgtcatt agcagagcca aagtcatggt ctgccagctc gaaataactc 480

cagcaacttc tttggaagcc ctaacaatgg cccgcaggag tggagtgaaa accttgttca 540

atccagcccc tgccattgct gacctggatc cccagttcta caccctctca gatgtgttct 600

gctgcaatga aagtgaggct gagattttaa ctggcctcac ggtgggcagc gctgcagatg 660

ctggggaggc tgcattagtg ctcttgaaaa ggggctgcca ggtggtaatc attaccttag 720

gggctgaagg atgtgtggtg ctgtcacaga cagaacctga gccaaagcac attcccacag 780

agaaagtcaa ggctgtggat accacgggtg ctggtgacag ctttgtggga gctctggcct 840

tctacctggc ttactatcca aatctgtcct tggaagacat gctcaacaga tccaatttca 900

ttgcagcagt cagtgtccag gctgcaggaa cacagtcatc ttacccttac aaaaaagacc 960

ttccgcttac tctgttttga ttgctattag tcccaaaata aatatacctg ggaataaaat 1020

gtacttgggg gtggctgctc ctggctaatg cttattagaa aatgtcctcg tccccttttct 1080

ttgcaaatat tagttctttt acgaagtcat cctcaagctt caatttattt ataacgatga 1140

ttcttttgct ttccatgcat ttgcacaaaa caaccagaat taaagattcc acaacc 1196

<210> 208
<211> 322

<212> PRT
<213> Homo sapiens

<400> 208

Met Ala Ala Ser Gly Glu Pro Gln Arg Gln Trp Gln Glu Glu Val Ala
1 5 10 15

Ala Val Val Val Val Gly Ser Cys Met Thr Asp Leu Val Ser Leu Thr
20 25 30

Ser Arg Leu Pro Lys Thr Gly Glu Thr Ile His Gly His Lys Phe Phe
35 40 45

Ile Gly Phe Gly Gly Lys Gly Ala Asn Gln Cys Val Gln Ala Ala Arg
50 55 60

Leu Gly Ala Met Thr Ser Met Val Cys Lys Val Gly Lys Asp Ser Phe
65 70 75 80

Gly Asn Asp Tyr Ile Glu Asn Leu Lys Gln Asn Asp Ile Ser Thr Glu
85 90 95

Phe Thr Tyr Gln Thr Lys Asp Ala Ala Thr Gly Thr Ala Ser Ile Ile
100 105 110

Val Asn Asn Glu Gly Gln Asn Ile Ile Val Ile Val Ala Gly Ala Asn
115 120 125

Leu Leu Leu Asn Thr Glu Asp Leu Arg Ala Ala Ala Asn Val Ile Ser
130 135 140

Arg Ala Lys Val Met Val Cys Gln Leu Glu Ile Thr Pro Ala Thr Ser
145 150 155 160

Leu Glu Ala Leu Thr Met Ala Arg Arg Ser Gly Val Lys Thr Leu Phe
165 170 175

Asn Pro Ala Pro Ala Ile Ala Asp Leu Asp Pro Gln Phe Tyr Thr Leu
180 185 190

Ser Asp Val Phe Cys Cys Asn Glu Ser Glu Ala Glu Ile Leu Thr Gly
195 200 205

Leu Thr Val Gly Ser Ala Ala Asp Ala Gly Glu Ala Ala Leu Val Leu
210 215 220

Leu Lys Arg Gly Cys Gln Val Val Ile Ile Thr Leu Gly Ala Glu Gly
225 230 235 240

Cys Val Val Leu Ser Gln Thr Glu Pro Glu Pro Lys His Ile Pro Thr
245 250 255

Glu Lys Val Lys Ala Val Asp Thr Thr Gly Ala Gly Asp Ser Phe Val
260 265 270

Gly Ala Leu Ala Phe Tyr Leu Ala Tyr Tyr Pro Asn Leu Ser Leu Glu
275 280 285

Asp Met Leu Asn Arg Ser Asn Phe Ile Ala Ala Val Ser Val Gln Ala
290 295 300

Ala Gly Thr Gln Ser Ser Tyr Pro Tyr Lys Lys Asp Leu Pro Leu Thr
305 310 315 320

Leu Phe

<210> 209
<211> 1566
<212> DNA
<213> Homo sapiens

<400> 209
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ccggctggcc gggcgcgggg ggccggagga tggcggcctg ggggccctgc gggggctgtc 180

ggtggccgcc agctgcctgg tggtgctgga gaacttgctg gtgctggcgg ccatcaccag 240

ccacatgcgg tcgcgacgct gggtctacta ttgcctggtg aacatcacgc tgagtgacct 300

gctcacgggc gcggcctacc tggccaacgt gctgctgtcg ggggcccgca ccttccgtct 360

ggcgcccgcc cagtggttcc tacgggaggg cctgctcttc accgccctgg ccgcctccac 420

cttcagcctg ctcttcactg caggggagcg ctttgccacc atggtgcggc cggtggccga 480

gagcggggcc accaagacca gccgcgtcta cggcttcatc ggcctctgct ggctgctggc 540

cgcgctgctg gggatgctgc ctttgctggg ctggaactgc ctgtgcgcct ttgaccgctg 600

ctccagcctt ctgcccctct actccaagcg ctacatcctc ttctgcctgg tgatcttcgc 660

cggcgtcctg gccaccatca tgggcctcta tggggccatc ttccgcctgg tgcaggccag 720

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ctctctgagg ccaagggaca gctttcgcgg ctcccgctcg ctcagctttc ggatgcggga 1140

gcccctgtcc agcatctcca gcgtgcggag catctgaagt tgcagtcttg cgtgtggatg 1200

gtgcagccac cgggtgcgtg ccaggcaggc cctcctgggg tacaggaagc tgtgtgcacg 1260

cagcctcgcc tgtatgggga gcagggaacg ggacaggccc ccatggtctt cccggtggcc 1320

tctcggggct tctgacgcca aatgggcttc ccatggtcac cctggacaag gaggtaacca 1380

ccccacctcc ccgtaggagc agagagcacc ctggtgtggg ggcgagtggt tccccacaac 1440

cccgcttctg tgtgattctg gggaagtccc ggcccctctc tgggcctcag tagggctccc 1500

aggctgcaag gggtggactg tgggatgcat gccctggcaa cattgaagtt cgatcatggt 1560

aaaaaa 1566

<210> 210
<211> 384
<212> PRT
<213> Homo sapiens

<400> 210

Met Asn Ala Thr Gly Thr Pro Val Ala Pro Glu Ser Cys Gln Gln Leu
1 5 10 15

Ala Ala Gly Gly His Ser Arg Leu Ile Val Leu His Tyr Asn His Ser
20 25 30

Gly Arg Leu Ala Gly Arg Gly Gly Pro Glu Asp Gly Gly Leu Gly Ala
35 40 45

Leu Arg Gly Leu Ser Val Ala Ala Ser Cys Leu Val Val Leu Glu Asn
50 55 60

```
Leu Leu Val Leu Ala Ala Ile Thr Ser His Met Arg Ser Arg Arg Trp
65                  70                  75                  80

Val Tyr Tyr Cys Leu Val Asn Ile Thr Leu Ser Asp Leu Leu Thr Gly
                85                  90                  95

Ala Ala Tyr Leu Ala Asn Val Leu Leu Ser Gly Ala Arg Thr Phe Arg
            100                 105                 110

Leu Ala Pro Ala Gln Trp Phe Leu Arg Glu Gly Leu Leu Phe Thr Ala
        115                 120                 125

Leu Ala Ala Ser Thr Phe Ser Leu Leu Phe Thr Ala Gly Glu Arg Phe
    130                 135                 140

Ala Thr Met Val Arg Pro Val Ala Glu Ser Gly Ala Thr Lys Thr Ser
145                 150                 155                 160

Arg Val Tyr Gly Phe Ile Gly Leu Cys Trp Leu Leu Ala Ala Leu Leu
                165                 170                 175

Gly Met Leu Pro Leu Leu Gly Trp Asn Cys Leu Cys Ala Phe Asp Arg
            180                 185                 190

Cys Ser Ser Leu Leu Pro Leu Tyr Ser Lys Arg Tyr Ile Leu Phe Cys
        195                 200                 205

Leu Val Ile Phe Ala Gly Val Leu Ala Thr Ile Met Gly Leu Tyr Gly
    210                 215                 220

Ala Ile Phe Arg Leu Val Gln Ala Ser Gly Gln Lys Ala Pro Arg Pro
225                 230                 235                 240

Ala Ala Arg Arg Lys Ala Arg Arg Leu Leu Lys Thr Val Leu Met Ile
                245                 250                 255

Leu Leu Ala Phe Leu Val Cys Trp Gly Pro Leu Phe Gly Leu Leu Leu
            260                 265                 270

Ala Asp Val Phe Gly Ser Asn Leu Trp Ala Gln Glu Tyr Leu Arg Gly
        275                 280                 285
```

```
Met Asp Trp Ile Leu Ala Leu Ala Val Leu Asn Ser Ala Val Asn Pro
    290                 295                 300

Ile Ile Tyr Ser Phe Arg Ser Arg Glu Val Cys Arg Ala Val Leu Ser
305                 310                 315                 320

Phe Leu Cys Cys Gly Cys Leu Arg Leu Gly Met Arg Gly Pro Gly Asp
                325                 330                 335

Cys Leu Ala Arg Ala Val Glu Ala His Ser Gly Ala Ser Thr Thr Asp
            340                 345                 350

Ser Ser Leu Arg Pro Arg Asp Ser Phe Arg Gly Ser Arg Ser Leu Ser
        355                 360                 365

Phe Arg Met Arg Glu Pro Leu Ser Ser Ile Ser Ser Val Arg Ser Ile
    370                 375                 380
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<210> 211
<211> 3000
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (173)..(173)
<223> n is a, c, g, or t

<400> 211

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gggcccgcgc ctggctgggc ggcggctccc cgcgccccgg cagcccggcc tgcagccccg    120

tgctgggctc aggaggccgc gcgcgcccgg ggccggggcc ggggccggga cgngaccgag    180

cgggcggcgt cagagcccgg gcccgtgccg cgccgggaca cagcttccgg aaggtgacgc    240

tcaccaagcc caccttctgc cacctctgct ccgacttcat ctgggggctg gccggcttcc    300

tgtgcgacgt ctgcaatttc atgtctcatg agaagtgcct gaagcacgtg aggatcccgt    360

gcacgagtgt ggcacccagc ctggtccggg ttcctgtagc ccactgcttc ggcccccggg    420

ggctccacaa gcgcaagttc tgtgctgtct gccgcaaggt cctggaggca ccggcgctcc    480

actgcgaagt gtgtgagctg cacctccacc cagactgtgt gcccttcgcc tgcagtgact    540

gccgccagtg ccaccaggat gggcaccagg atcacgacac ccatcaccac cactggcggg    600
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aggggaacct gccctcggga gcgcgctgcg aggtctgcag gaagacgtgc ggctcctctg 660

acgtgctggc cggcgtgcgc tgcgagtggt gcggggtcca ggcgcactcc ctctgctccg 720

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agacacaggc aactccggag tccgggaagc aaacgctgaa gatctttgat ggcgacgacg 960

cggtgagaag aagccagttc cgcctcgtca cggtgtcccg cctggccggt gccgaggagg 1020

tgctggaggc cgcactgcgg gcccaccaca tccccgagga ccctggccac ctggagctgt 1080

gccggctgcc cccttcctct caggcctgtg acgcctgggc tgggggcaag gctgggagtg 1140

ctgtgatctc ggaggagggc agaagccccg ggtccggcga ggccacgcca gaggcctggg 1200

tcatccgggc tctgccgcgg gcccaggagg tcctgaagat ctaccctggc tggctcaagg 1260

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tggaggtcct gccgctgctc ggccgccagg ccgagagtcc cgagagcttc cagctggtgg 1380

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tggaccggct acaggacatc cggcagatgt ctgtgcggca ggtgagccag acgcggttct 1500

acgtggcaga gagcagggat gtagccccgc acgtctccct gtttgttggc ggcctgcctc 1560

ccggcctgtc tcccgaggag tacagcagcc tgctgcatga ggccggggct accaaagcca 1620

ccgtggtgtc cgtgagtcac atctactcct cccaaggcgc ggtagtgttg gacgttgcct 1680

gctttgcgga ggccgagcgg ctgtacatgc tgctgaagga catggctgtg cggggccggc 1740

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gcttccggaa gctactgaac cctcatcagg tcttcgacct gaccaacgga ggtcctcttc 1920

ccgggctcca cctgttctcc caggtgccct gcttccgggt gctggtgtgt ggtggcgatg 1980

gcactgtggg ctgggtgctt ggcgccctgg aggagacacg gtaccgactg gcctgcccgg 2040

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acgccgtgct catggaccgc tggaccatcc tgctggatgc ccacgaagct ggcagtgcag 2220

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ttggcatcga cgcggagctg agcctggact tccaccaggc acgggaagag gagcctggca 2340

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gtcactctcg gagcctgcac aagcagatcc ggctgcaggt ggagcggcag gaggtggagc 2460

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tgtggggctc cgacagcgac accaggtttg agaagccacg catggacgac gggctgctgg 2580

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gaatccggat tgcccagggt tcctacttcc gagtcacgct cctcaaggcc accccggtgc 2700

aggtggacgg ggagccctgg gtccaggccc cggggcacat gatcatctca gctgctggcc 2760

ctaaggtgca catgctgagg aaggccaagc agaagccgag gagggccggg accaccaggg 2820

atgcccgggc ggatcgtgcg cctgcccctg agagcgatcc taggtagggg tggctggggc 2880

agcccaaggg ctcgagccat ctctgctccc gccagccttg ttttcaggtg gtctggaggc 2940

agctccacgt cacacagtgg ctgtcatata ttgaagttac cttcccactg gaaaaaaaat 3000

<210> 212
<211> 942
<212> PRT
<213> Homo sapiens

<400> 212

Met Ala Ala Ala Ala Glu Pro Gly Ala Arg Ala Trp Leu Gly Gly Gly
1 5 10 15

Ser Pro Arg Pro Gly Ser Pro Ala Cys Ser Pro Val Leu Gly Ser Gly
20 25 30

Gly Arg Ala Arg Pro Gly Pro Gly Pro Gly Pro Gly Arg Asp Arg Ala
35 40 45

Gly Gly Val Arg Ala Arg Ala Arg Ala Ala Pro Gly His Ser Phe Arg
50 55 60

Lys Val Thr Leu Thr Lys Pro Thr Phe Cys His Leu Cys Ser Asp Phe
65 70 75 80

Ile Trp Gly Leu Ala Gly Phe Leu Cys Asp Val Cys Asn Phe Met Ser
85 90 95

His Glu Lys Cys Leu Lys His Val Arg Ile Pro Cys Thr Ser Val Ala
100 105 110

```
Pro Ser Leu Val Arg Val Pro Val Ala His Cys Phe Gly Pro Arg Gly
        115                 120                 125

Leu His Lys Arg Lys Phe Cys Ala Val Cys Arg Lys Val Leu Glu Ala
    130                 135                 140

Pro Ala Leu His Cys Glu Val Cys Glu Leu His Leu His Pro Asp Cys
145                 150                 155                 160

Val Pro Phe Ala Cys Ser Asp Cys Arg Gln Cys His Gln Asp Gly His
                165                 170                 175

Gln Asp His Asp Thr His His His His Trp Arg Glu Gly Asn Leu Pro
            180                 185                 190

Ser Gly Ala Arg Cys Glu Val Cys Arg Lys Thr Cys Gly Ser Ser Asp
        195                 200                 205

Val Leu Ala Gly Val Arg Cys Glu Trp Cys Gly Val Gln Ala His Ser
    210                 215                 220

Leu Cys Ser Ala Ala Leu Ala Pro Glu Cys Gly Phe Gly Arg Leu Arg
225                 230                 235                 240

Ser Leu Val Leu Pro Pro Ala Cys Val Arg Leu Leu Pro Gly Gly Phe
                245                 250                 255

Ser Lys Thr Gln Ser Phe Arg Ile Val Glu Ala Ala Glu Pro Gly Glu
            260                 265                 270

Gly Gly Asp Gly Ala Asp Gly Ser Ala Ala Val Gly Pro Gly Arg Glu
        275                 280                 285

Thr Gln Ala Thr Pro Glu Ser Gly Lys Gln Thr Leu Lys Ile Phe Asp
    290                 295                 300

Gly Asp Asp Ala Val Arg Arg Ser Gln Phe Arg Leu Val Thr Val Ser
305                 310                 315                 320

Arg Leu Ala Gly Ala Glu Glu Val Leu Glu Ala Ala Leu Arg Ala His
                325                 330                 335
```

```
His Ile Pro Glu Asp Pro Gly His Leu Glu Leu Cys Arg Leu Pro Pro
            340                 345                 350

Ser Ser Gln Ala Cys Asp Ala Trp Ala Gly Gly Lys Ala Gly Ser Ala
        355                 360                 365

Val Ile Ser Glu Glu Gly Arg Ser Pro Gly Ser Gly Glu Ala Thr Pro
    370                 375                 380

Glu Ala Trp Val Ile Arg Ala Leu Pro Arg Ala Gln Glu Val Leu Lys
385                 390                 395                 400

Ile Tyr Pro Gly Trp Leu Lys Val Gly Val Ala Tyr Val Ser Val Arg
                405                 410                 415

Val Thr Pro Lys Ser Thr Ala Arg Ser Val Val Leu Glu Val Leu Pro
            420                 425                 430

Leu Leu Gly Arg Gln Ala Glu Ser Pro Glu Ser Phe Gln Leu Val Glu
        435                 440                 445

Val Ala Met Gly Cys Arg His Val Gln Arg Thr Met Leu Met Asp Glu
    450                 455                 460

Gln Pro Leu Leu Asp Arg Leu Gln Asp Ile Arg Gln Met Ser Val Arg
465                 470                 475                 480

Gln Val Ser Gln Thr Arg Phe Tyr Val Ala Glu Ser Arg Asp Val Ala
                485                 490                 495

Pro His Val Ser Leu Phe Val Gly Gly Leu Pro Pro Gly Leu Ser Pro
            500                 505                 510

Glu Glu Tyr Ser Ser Leu Leu His Glu Ala Gly Ala Thr Lys Ala Thr
        515                 520                 525

Val Val Ser Val Ser His Ile Tyr Ser Ser Gln Gly Ala Val Val Leu
    530                 535                 540

Asp Val Ala Cys Phe Ala Glu Ala Glu Arg Leu Tyr Met Leu Leu Lys
545                 550                 555                 560
```

```
Asp Met Ala Val Arg Gly Arg Leu Leu Thr Ala Leu Val Leu Pro Asp
                565                 570                 575

Leu Leu His Ala Lys Leu Pro Pro Asp Ser Cys Pro Leu Leu Val Phe
            580                 585                 590

Val Asn Pro Lys Ser Gly Gly Leu Lys Gly Arg Asp Leu Leu Cys Ser
        595                 600                 605

Phe Arg Lys Leu Leu Asn Pro His Gln Val Phe Asp Leu Thr Asn Gly
    610                 615                 620

Gly Pro Leu Pro Gly Leu His Leu Phe Ser Gln Val Pro Cys Phe Arg
625                 630                 635                 640

Val Leu Val Cys Gly Gly Asp Gly Thr Val Gly Trp Val Leu Gly Ala
                645                 650                 655

Leu Glu Glu Thr Arg Tyr Arg Leu Ala Cys Pro Glu Pro Ser Val Ala
            660                 665                 670

Ile Leu Pro Leu Gly Thr Gly Asn Asp Leu Gly Arg Val Leu Arg Trp
        675                 680                 685

Gly Ala Gly Tyr Ser Gly Glu Asp Pro Phe Ser Val Leu Leu Ser Val
    690                 695                 700

Asp Glu Ala Asp Ala Val Leu Met Asp Arg Trp Thr Ile Leu Leu Asp
705                 710                 715                 720

Ala His Glu Ala Gly Ser Ala Glu Asn Asp Thr Ala Asp Ala Glu Pro
                725                 730                 735

Pro Lys Ile Val Gln Met Ser Asn Tyr Cys Gly Ile Gly Ile Asp Ala
            740                 745                 750

Glu Leu Ser Leu Asp Phe His Gln Ala Arg Glu Glu Glu Pro Gly Lys
        755                 760                 765

Phe Thr Ser Arg Leu His Asn Lys Gly Val Tyr Val Arg Val Gly Leu
    770                 775                 780

Gln Lys Ile Ser His Ser Arg Ser Leu His Lys Gln Ile Arg Leu Gln
```

785 790 795 800

Val Glu Arg Gln Glu Val Glu Leu Pro Ser Ile Glu Gly Leu Ile Phe
805 810 815

Ile Asn Ile Pro Ser Trp Gly Ser Gly Ala Asp Leu Trp Gly Ser Asp
820 825 830

Ser Asp Thr Arg Phe Glu Lys Pro Arg Met Asp Asp Gly Leu Leu Glu
835 840 845

Val Val Gly Val Thr Gly Val Val His Met Gly Gln Val Gln Gly Gly
850 855 860

Leu Arg Ser Gly Ile Arg Ile Ala Gln Gly Ser Tyr Phe Arg Val Thr
865 870 875 880

Leu Leu Lys Ala Thr Pro Val Gln Val Asp Gly Glu Pro Trp Val Gln
885 890 895

Ala Pro Gly His Met Ile Ile Ser Ala Ala Gly Pro Lys Val His Met
900 905 910

Leu Arg Lys Ala Lys Gln Lys Pro Arg Arg Ala Gly Thr Thr Arg Asp
915 920 925

Ala Arg Ala Asp Arg Ala Pro Ala Pro Glu Ser Asp Pro Arg
930 935 940

<210> 213
<211> 1230
<212> DNA
<213> Homo sapiens

<400> 213
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ttttttgcat gatcttggat tgtcaccctg ctgtatttaa acattaaaaa gcctgtcttt 120

tcgttgaaga ggacaggggt taaaatgaat gaagacctga aggtcaattt aagcgggctg 180

cctcgggatt atttagatgc cgctgctgcg gagaacatct cggctgctgt ctcctcccgg 240

gttcctgccg tagagccaga gcctgagctc gtagtcaacc cctgggacat tgtcttgtgt 300

acctcgggaa ccctcatctc ctgtgaaaat gccattgtgg tccttatcat cttccacaac 360

cccagcctgc gagcacccat gttcctgcta ataggcagcc tggctcttgc agacctgctg 420

gccggcattg gactcatcac caattttgtt tttgcctacc tgcttcagtc agaagccacc 480

aagctggtca cgatcggcct cattgtcgcc tctttctctg cctctgtctg cagcttgctg 540

gctatcactg ttgaccgcta cctctcactg tactacgctc tgacgtacca ttcggagagg 600

acggtcacgt ttacctatgt catgctcgtc atgctctggg ggacctccat ctgcctgggg 660

ctgctgcccg tcatgggctg gaactgcctc cgagacgagt ccacctgcag cgtggtcaga 720

ccgctcacca agaacaacgc ggccatcctc tcggtgtcct tcctcttcat gtttgcgctc 780

atgcttcagc tctacatcca gatctgtaag attgtgatga ggcacgccca tcagatagcc 840

ctgcagcacc acttcctggc cacgtcgcac tatgtgacca cccggaaagg ggtctccacc 900

ctggctatca tcctggggac gtttgctgct tgctggatgc ctttcaccct ctattccttg 960

atagcggatt acacctaccc ctccatctat acctacgcca ccctcctgcc cgccacctac 1020

aattccatca tcaaccctgt catatatgct ttcagaaacc aagagatcca gaaagcgctc 1080

tgtctcattt gctgcggctg catcccgtcc agtctcgccc agagagcgcg ctcgcccagt 1140

gatgtgtagc acccttgcac ccaggaggac tctgcattta ccaagcactt ccactgcctg 1200

gccaaggttt gagatgcttc ccttgaattc 1230

<210> 214
<211> 334
<212> PRT
<213> Homo sapiens

<400> 214

Met Asn Glu Asp Leu Lys Val Asn Leu Ser Gly Leu Pro Arg Asp Tyr
1 5 10 15

Leu Asp Ala Ala Ala Ala Glu Asn Ile Ser Ala Ala Val Ser Ser Arg
20 25 30

Val Pro Ala Val Glu Pro Glu Pro Glu Leu Val Val Asn Pro Trp Asp
35 40 45

Ile Val Leu Cys Thr Ser Gly Thr Leu Ile Ser Cys Glu Asn Ala Ile
50 55 60

Val Val Leu Ile Ile Phe His Asn Pro Ser Leu Arg Ala Pro Met Phe
65 70 75 80

```
Leu Leu Ile Gly Ser Leu Ala Leu Ala Asp Leu Leu Ala Gly Ile Gly
                85                  90                  95

Leu Ile Thr Asn Phe Val Phe Ala Tyr Leu Leu Gln Ser Glu Ala Thr
            100                 105                 110

Lys Leu Val Thr Ile Gly Leu Ile Val Ala Ser Phe Ser Ala Ser Val
        115                 120                 125

Cys Ser Leu Leu Ala Ile Thr Val Asp Arg Tyr Leu Ser Leu Tyr Tyr
    130                 135                 140

Ala Leu Thr Tyr His Ser Glu Arg Thr Val Thr Phe Thr Tyr Val Met
145                 150                 155                 160

Leu Val Met Leu Trp Gly Thr Ser Ile Cys Leu Gly Leu Leu Pro Val
                165                 170                 175

Met Gly Trp Asn Cys Leu Arg Asp Glu Ser Thr Cys Ser Val Val Arg
            180                 185                 190

Pro Leu Thr Lys Asn Asn Ala Ala Ile Leu Ser Val Ser Phe Leu Phe
        195                 200                 205

Met Phe Ala Leu Met Leu Gln Leu Tyr Ile Gln Ile Cys Lys Ile Val
    210                 215                 220

Met Arg His Ala His Gln Ile Ala Leu Gln His His Phe Leu Ala Thr
225                 230                 235                 240

Ser His Tyr Val Thr Thr Arg Lys Gly Val Ser Thr Leu Ala Ile Ile
                245                 250                 255

Leu Gly Thr Phe Ala Ala Cys Trp Met Pro Phe Thr Leu Tyr Ser Leu
            260                 265                 270

Ile Ala Asp Tyr Thr Tyr Pro Ser Ile Tyr Thr Tyr Ala Thr Leu Leu
        275                 280                 285

Pro Ala Thr Tyr Asn Ser Ile Ile Asn Pro Val Ile Tyr Ala Phe Arg
    290                 295                 300
```

Asn Gln Glu Ile Gln Lys Ala Leu Cys Leu Ile Cys Cys Gly Cys Ile
305 310 315 320

Pro Ser Ser Leu Ala Gln Arg Ala Arg Ser Pro Ser Asp Val
325 330

<210> 215
<211> 2169
<212> DNA
<213> Homo sapiens

<400> 215
ccgcctccga gtgccttgcg cggacctgag ctggagatgc tggccgggct accgacgtca 60

gaccccgggc gcctcatcac ggacccgcgc agcggccgca cctacctcaa aggccgcttg 120

ttgggcaagg ggggcttcgc ccgctgctac gaggccactg acacagagac tggcagcgcc 180

tacgctgtca aagtcatccc gcagagccgc gtcgccaagc cgcatcagcg cgagaagatc 240

ctaaatgaga ttgagctgca ccgagacctg cagcaccgcc acatcgtgcg tttttcgcac 300

cactttgagg acgctgacaa catctacatt ttcttggagc tctgcagccg aaagtccctg 360

gcccacatct ggaaggcccg gcacaccctg ttggagccag aagtgcgcta ctacctgcgg 420

cagatccttt ctggcctcaa gtacttgcac cagcgcggca tcttgcaccg ggacctcaag 480

ttgggaaatt ttttcatcac tgagaacatg gaactgaagg tgggggattt tgggctggca 540

gcccggttgg agcctccgga gcagaggaag aagaccatct gtggcacccc caactatgtg 600

gctccagaag tgctgctgag acagggccac ggccctgaag cggatgtatg gtcactgggc 660

tgtgtcatgt acacgctgct ctgcgggagc cctccctttg agacggctga cctgaaggag 720

acgtaccgct gcatcaagca ggttcactac acgctgcctg ccagcctctc actgcctgcc 780

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atcctgcgcc atgacttctt taccaagggc tacacccccg atcgactccc tatcagcagc 900

tgcgtgacag tcccagacct gacacccccc aacccagcta ggagtctgtt tgccaaagtt 960

accaagagcc tctttggcag aaagaagaag agtaagaatc atgcccagga gagggatgag 1020

gtctccggtt tggtgagcgg cctcatgcgc acatccgttg gccatcagga tgccaggcca 1080

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ctcttcaacg atggcacaca tatggccctg tcggccaaca gaaagactgt gcactacaat 1440

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cagctgggta tcctgcggta cttcgcctcc tacatggagc agcacctcat gaagggtgga 1560

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ggaccagctt tactggagtt gggggcggct tgtcttcgct ggctcctacc ccatctccaa 2040

gataagcctg agccttagct cccagctagg gggcgttatt tatggaccac ttttatttat 2100

tgtcagacac ttatttattg ggatgtgagc cccaggggc ctcctcctag gataataaac 2160

aattttgca 2169

<210> 216
<211> 607
<212> PRT
<213> Homo sapiens

<400> 216

Met Leu Ala Gly Leu Pro Thr Ser Asp Pro Gly Arg Leu Ile Thr Asp
1 5 10 15

Pro Arg Ser Gly Arg Thr Tyr Leu Lys Gly Arg Leu Leu Gly Lys Gly
20 25 30

Gly Phe Ala Arg Cys Tyr Glu Ala Thr Asp Thr Glu Thr Gly Ser Ala
35 40 45

Tyr Ala Val Lys Val Ile Pro Gln Ser Arg Val Ala Lys Pro His Gln
50 55 60

Arg Glu Lys Ile Leu Asn Glu Ile Glu Leu His Arg Asp Leu Gln His
65 70 75 80

```
Arg His Ile Val Arg Phe Ser His His Phe Glu Asp Ala Asp Asn Ile
                85                  90                  95

Tyr Ile Phe Leu Glu Leu Cys Ser Arg Lys Ser Leu Ala His Ile Trp
            100                 105                 110

Lys Ala Arg His Thr Leu Leu Glu Pro Glu Val Arg Tyr Tyr Leu Arg
        115                 120                 125

Gln Ile Leu Ser Gly Leu Lys Tyr Leu His Gln Arg Gly Ile Leu His
    130                 135                 140

Arg Asp Leu Lys Leu Gly Asn Phe Phe Ile Thr Glu Asn Met Glu Leu
145                 150                 155                 160

Lys Val Gly Asp Phe Gly Leu Ala Ala Arg Leu Glu Pro Pro Glu Gln
                165                 170                 175

Arg Lys Lys Thr Ile Cys Gly Thr Pro Asn Tyr Val Ala Pro Glu Val
            180                 185                 190

Leu Leu Arg Gln Gly His Gly Pro Glu Ala Asp Val Trp Ser Leu Gly
        195                 200                 205

Cys Val Met Tyr Thr Leu Leu Cys Gly Ser Pro Pro Phe Glu Thr Ala
    210                 215                 220

Asp Leu Lys Glu Thr Tyr Arg Cys Ile Lys Gln Val His Tyr Thr Leu
225                 230                 235                 240

Pro Ala Ser Leu Ser Leu Pro Ala Arg Gln Leu Leu Ala Ala Ile Leu
                245                 250                 255

Arg Ala Ser Pro Arg Asp Arg Pro Ser Ile Asp Gln Ile Leu Arg His
            260                 265                 270

Asp Phe Phe Thr Lys Gly Tyr Thr Pro Asp Arg Leu Pro Ile Ser Ser
        275                 280                 285

Cys Val Thr Val Pro Asp Leu Thr Pro Pro Asn Pro Ala Arg Ser Leu
    290                 295                 300
```

```
Phe Ala Lys Val Thr Lys Ser Leu Phe Gly Arg Lys Lys Lys Ser Lys
305                 310                 315                 320

Asn His Ala Gln Glu Arg Asp Glu Val Ser Gly Leu Val Ser Gly Leu
                325                 330                 335

Met Arg Thr Ser Val Gly His Gln Asp Ala Arg Pro Glu Ala Pro Ala
            340                 345                 350

Ala Ser Gly Pro Ala Pro Val Ser Leu Val Glu Thr Ala Pro Glu Asp
        355                 360                 365

Ser Ser Pro Arg Gly Thr Leu Ala Ser Ser Gly Asp Gly Phe Glu Glu
    370                 375                 380

Gly Leu Thr Val Ala Thr Val Val Glu Ser Ala Leu Cys Ala Leu Arg
385                 390                 395                 400

Asn Cys Ile Ala Phe Met Pro Pro Ala Glu Gln Asn Pro Ala Pro Leu
                405                 410                 415

Ala Gln Pro Glu Pro Leu Val Trp Val Ser Lys Trp Val Asp Tyr Ser
            420                 425                 430

Asn Lys Phe Gly Phe Gly Tyr Gln Leu Ser Ser Arg Arg Val Ala Val
        435                 440                 445

Leu Phe Asn Asp Gly Thr His Met Ala Leu Ser Ala Asn Arg Lys Thr
    450                 455                 460

Val His Tyr Asn Pro Thr Ser Thr Lys His Phe Ser Phe Ser Val Gly
465                 470                 475                 480

Ala Val Pro Arg Ala Leu Gln Pro Gln Leu Gly Ile Leu Arg Tyr Phe
                485                 490                 495

Ala Ser Tyr Met Glu Gln His Leu Met Lys Gly Gly Asp Leu Pro Ser
            500                 505                 510

Val Glu Glu Val Glu Val Pro Ala Pro Pro Leu Leu Leu Gln Trp Val
        515                 520                 525
```

```
Lys Thr Asp Gln Ala Leu Leu Met Leu Phe Ser Asp Gly Thr Val Gln
    530                 535                 540

Val Asn Phe Tyr Gly Asp His Thr Lys Leu Ile Leu Ser Gly Trp Glu
545                 550                 555                 560

Pro Leu Leu Val Thr Phe Val Ala Arg Asn Arg Ser Ala Cys Thr Tyr
                565                 570                 575

Leu Ala Ser His Leu Arg Gln Leu Gly Cys Ser Pro Asp Leu Arg Gln
            580                 585                 590

Arg Leu Arg Tyr Ala Leu Arg Leu Leu Arg Asp Arg Ser Pro Ala
        595                 600                 605
```

<210> 217
<211> 1547
<212> DNA
<213> Homo sapiens

<400> 217

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aatgctgtgg ctagcccttg gccccttcc tgccatggag aaccaggtgc tggtaattcg    120

catcaagatc ccaaatagtg gcgcggtgga ctggacagtg cactccgggc cgcagttact    180

cttcagggat gtgctggatg tgataggcca ggttctgcct gaagcaacaa ctacagcatt    240

tgaatatgaa gatgaagatg gtgatcgaat tacagtgaga agtgatgagg aaatgaaggc    300

aatgctgtca tattattatt ccacagtaat ggaacagcaa gtaaatggac agttaataga    360

gcctctgcag atatttccaa gagcctgcaa gcctcctggg gaacggaaca tacatggcct    420

gaaggtgaat actcgggccg gaccctctca acacagcagc ccagcagtct cagattcact    480

tccaagcaat agcttaaaga agtcttctgc tgaactgaaa aaaatactag ccaatggcca    540

gatgaatgaa caagacatac gatatcggga cactcttggt catggcaacg gaggcacagt    600

ctacaaagca tatcatgtcc cgagtgggaa aatattagct gtaaaggtca tactactaga    660

tattacactg gaacttcaga agcaaattat gtctgaattg gaaattcttt ataagtgcga    720

ttcatcatat atcattggat tttatggagc atttttttgta gaaaacagga tttcaatatg    780

tacagaattc atggatgggg gatctttgga tgtatatagg aaaatgccag aacatgtcct    840

tggaagaatt gcagtagcag ttgttaaagg ccttacttat ttgtggagtt taaagatttt    900

acatagagac gtgaagccct ccaatatgct agtaaacaca agaggacagg ttaagctgtg    960
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tgattttgga gttagcactc agctggtgaa ttctatagcc aagacgtatg ttggaacaaa 1020

tgcttatatg gcgcctgaaa ggatttcagg ggagcagtat ggaattcatt ctgatgtctg 1080

gagcttagga atctctttta tggagcttgc tcttgggagg tttccatatc ctcagattca 1140

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gcccgtcctt ccagttggag agttctcgga gccatttgta catttcatca ctcagtgtat 1260

gcgaaaacag ccaaaagaaa ggccagcacc tgaagaattg atgggccacc cgttcatcgt 1320

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gtaaccaagg agaacaaccc acccgtcgcc cttctccgta tgctgcctgc gccagaagag 1500

ctttgctggg ccctggcttc cctgccctcg ccttcaccct ctgtcag 1547

<210> 218
<211> 448
<212> PRT
<213> Homo sapiens

<400> 218

Met Leu Trp Leu Ala Leu Gly Pro Phe Pro Ala Met Glu Asn Gln Val
1 5 10 15

Leu Val Ile Arg Ile Lys Ile Pro Asn Ser Gly Ala Val Asp Trp Thr
20 25 30

Val His Ser Gly Pro Gln Leu Leu Phe Arg Asp Val Leu Asp Val Ile
35 40 45

Gly Gln Val Leu Pro Glu Ala Thr Thr Thr Ala Phe Glu Tyr Glu Asp
50 55 60

Glu Asp Gly Asp Arg Ile Thr Val Arg Ser Asp Glu Glu Met Lys Ala
65 70 75 80

Met Leu Ser Tyr Tyr Tyr Ser Thr Val Met Glu Gln Gln Val Asn Gly
85 90 95

Gln Leu Ile Glu Pro Leu Gln Ile Phe Pro Arg Ala Cys Lys Pro Pro
100 105 110

```
Gly Glu Arg Asn Ile His Gly Leu Lys Val Asn Thr Arg Ala Gly Pro
        115                 120                 125

Ser Gln His Ser Ser Pro Ala Val Ser Asp Ser Leu Pro Ser Asn Ser
    130                 135                 140

Leu Lys Lys Ser Ser Ala Glu Leu Lys Lys Ile Leu Ala Asn Gly Gln
145                 150                 155                 160

Met Asn Glu Gln Asp Ile Arg Tyr Arg Asp Thr Leu Gly His Gly Asn
                165                 170                 175

Gly Gly Thr Val Tyr Lys Ala Tyr His Val Pro Ser Gly Lys Ile Leu
            180                 185                 190

Ala Val Lys Val Ile Leu Leu Asp Ile Thr Leu Glu Leu Gln Lys Gln
        195                 200                 205

Ile Met Ser Glu Leu Glu Ile Leu Tyr Lys Cys Asp Ser Ser Tyr Ile
    210                 215                 220

Ile Gly Phe Tyr Gly Ala Phe Phe Val Glu Asn Arg Ile Ser Ile Cys
225                 230                 235                 240

Thr Glu Phe Met Asp Gly Gly Ser Leu Asp Val Tyr Arg Lys Met Pro
                245                 250                 255

Glu His Val Leu Gly Arg Ile Ala Val Ala Val Val Lys Gly Leu Thr
            260                 265                 270

Tyr Leu Trp Ser Leu Lys Ile Leu His Arg Asp Val Lys Pro Ser Asn
        275                 280                 285

Met Leu Val Asn Thr Arg Gly Gln Val Lys Leu Cys Asp Phe Gly Val
    290                 295                 300

Ser Thr Gln Leu Val Asn Ser Ile Ala Lys Thr Tyr Val Gly Thr Asn
305                 310                 315                 320

Ala Tyr Met Ala Pro Glu Arg Ile Ser Gly Glu Gln Tyr Gly Ile His
                325                 330                 335

Ser Asp Val Trp Ser Leu Gly Ile Ser Phe Met Glu Leu Ala Leu Gly
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340 345 350

Arg Phe Pro Tyr Pro Gln Ile Gln Lys Asn Gln Gly Ser Leu Met Pro
355 360 365

Leu Gln Leu Leu Gln Cys Ile Val Asp Glu Asp Ser Pro Val Leu Pro
370 375 380

Val Gly Glu Phe Ser Glu Pro Phe Val His Phe Ile Thr Gln Cys Met
385 390 395 400

Arg Lys Gln Pro Lys Glu Arg Pro Ala Pro Glu Glu Leu Met Gly His
405 410 415

Pro Phe Ile Val Gln Phe Asn Asp Gly Asn Ala Ala Val Val Ser Met
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Trp Val Cys Arg Ala Leu Glu Glu Arg Arg Ser Gln Gln Gly Pro Pro
435 440 445

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accatccaaa gcagcaaatt gagattcctt gatttgggga agaggtttgg gaggaaccct 180

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ggaggaacaa ttcagagaga gcttggaagc tcgaagtctg gctgtggcca tgggagatac 300

agtagtggag cctgcccccc tgaagccaac ttctgagccc acttctggcc caccagggaa 360

taatgggggg tccctgctaa gtgtcatcac ggaggggggtc ggggaactat cagtgattga 420

ccctgaggtg gcccagaagg cctgccagga ggtgttggag aaagtcaagc ttttgcatgg 480

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catttcatac ctgtataact ccaaggagcc tggagtacaa gcctacattg gcaaccggct 780

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tccgttct 3068

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<211> 801
<212> PRT
<213> Homo sapiens

<400> 220

Met Gly Asp Thr Val Val Glu Pro Ala Pro Leu Lys Pro Thr Ser Glu
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Pro Thr Ser Gly Pro Pro Gly Asn Asn Gly Gly Ser Leu Leu Ser Val
20 25 30

Ile Thr Glu Gly Val Gly Glu Leu Ser Val Ile Asp Pro Glu Val Ala
35 40 45

Gln Lys Ala Cys Gln Glu Val Leu Glu Lys Val Lys Leu Leu His Gly
50 55 60

Gly Val Ala Val Ser Ser Arg Gly Thr Pro Leu Glu Leu Val Asn Gly
65 70 75 80

Asp Gly Val Asp Ser Glu Ile Arg Cys Leu Asp Asp Pro Pro Ala Gln
85 90 95

Ile Arg Glu Glu Glu Asp Glu Met Gly Ala Ala Val Ala Ser Gly Thr
100 105 110

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Ala Lys Gly Ala Arg Arg Arg Arg Gln Asn Asn Ser Ala Lys Gln Ser
        115                 120                 125

Trp Leu Leu Arg Leu Phe Glu Ser Lys Leu Phe Asp Ile Ser Met Ala
    130                 135                 140

Ile Ser Tyr Leu Tyr Asn Ser Lys Glu Pro Gly Val Gln Ala Tyr Ile
145                 150                 155                 160

Gly Asn Arg Leu Phe Cys Phe Arg Asn Glu Asp Val Asp Phe Tyr Leu
                165                 170                 175

Pro Gln Leu Leu Asn Met Tyr Ile His Met Asp Glu Asp Val Gly Asp
            180                 185                 190

Ala Ile Lys Pro Tyr Ile Val His Arg Cys Arg Gln Ser Ile Asn Phe
        195                 200                 205

Ser Leu Gln Cys Ala Leu Leu Val Gly Ala Tyr Ser Ser Asp Met His
    210                 215                 220

Ile Ser Thr Gln Arg His Ser Arg Gly Thr Lys Leu Arg Lys Leu Ile
225                 230                 235                 240

Leu Ser Asp Glu Leu Lys Pro Ala His Arg Lys Arg Glu Leu Pro Ser
                245                 250                 255

Leu Ser Pro Ala Pro Asp Thr Gly Leu Ser Pro Ser Lys Arg Thr His
            260                 265                 270

Gln Arg Ser Lys Ser Asp Ala Thr Ala Ser Ile Ser Leu Ser Ser Asn
        275                 280                 285

Leu Lys Arg Thr Ala Ser Asn Pro Lys Val Glu Asn Glu Asp Glu Pro
    290                 295                 300

Val Arg Leu Ala Pro Glu Arg Glu Phe Ile Lys Ser Leu Met Ala Ile
305                 310                 315                 320

Gly Lys Arg Val Val Thr Leu Pro Thr Lys Glu Gln Lys Thr Gln Arg
                325                 330                 335
```

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Leu Ile Ser Glu Leu Ser Leu Leu Asn His Lys Leu Pro Ala Arg Val
            340                 345                 350

Trp Leu Ser Thr Ala Gly Phe Asp His His Val Val Arg Val Pro His
        355                 360                 365

Thr Gln Ala Val Val Leu Asn Ser Lys Asp Lys Ala Pro Tyr Leu Ile
    370                 375                 380

Tyr Val Glu Val Leu Glu Cys Glu Asn Phe Asp Thr Thr Ser Val Pro
385                 390                 395                 400

Ala Arg Ile Pro Glu Asn Arg Ile Arg Ser Thr Arg Ser Val Glu Asn
                405                 410                 415

Leu Pro Glu Cys Gly Ile Thr His Glu Gln Arg Ala Gly Ser Phe Ser
            420                 425                 430

Thr Val Pro Asn Tyr Asp Asn Asp Asp Glu Ala Trp Ser Val Asp Asp
        435                 440                 445

Ile Gly Glu Leu Gln Val Glu Leu Pro Glu Val His Thr Asn Ser Cys
    450                 455                 460

Asp Asn Ile Ser Gln Phe Ser Val Asp Ser Ile Thr Ser Gln Glu Ser
465                 470                 475                 480

Lys Glu Pro Val Phe Ile Ala Ala Gly Asp Ile Arg Arg Arg Leu Ser
                485                 490                 495

Glu Gln Leu Ala His Thr Pro Thr Ala Phe Lys Arg Asp Pro Glu Asp
            500                 505                 510

Pro Ser Ala Val Ala Leu Lys Glu Pro Trp Gln Glu Lys Val Arg Arg
        515                 520                 525

Ile Arg Glu Gly Ser Pro Tyr Gly His Leu Pro Asn Trp Arg Leu Leu
    530                 535                 540

Ser Val Ile Val Lys Cys Gly Asp Asp Leu Arg Gln Glu Leu Leu Ala
545                 550                 555                 560
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Phe Gln Val Leu Lys Gln Leu Gln Ser Ile Trp Glu Gln Glu Arg Val
                565                 570                 575

Pro Leu Trp Ile Lys Pro Tyr Lys Ile Leu Val Ile Ser Ala Asp Ser
            580                 585                 590

Gly Met Ile Glu Pro Val Val Asn Ala Val Ser Ile His Gln Val Lys
        595                 600                 605

Lys Gln Ser Gln Leu Ser Leu Leu Asp Tyr Phe Leu Gln Glu His Gly
    610                 615                 620

Ser Tyr Thr Thr Glu Ala Phe Leu Ser Ala Gln Arg Asn Phe Val Gln
625                 630                 635                 640

Ser Cys Ala Gly Tyr Cys Leu Val Cys Tyr Leu Leu Gln Val Lys Asp
                645                 650                 655

Arg His Asn Gly Asn Ile Leu Leu Asp Ala Glu Gly His Ile Ile His
            660                 665                 670

Ile Asp Phe Gly Phe Ile Leu Ser Ser Ser Pro Arg Asn Leu Gly Phe
        675                 680                 685

Glu Thr Ser Ala Phe Lys Leu Thr Thr Glu Phe Val Asp Val Met Gly
    690                 695                 700

Gly Leu Asp Gly Asp Met Phe Asn Tyr Tyr Lys Met Leu Met Leu Gln
705                 710                 715                 720

Gly Leu Ile Ala Ala Arg Lys His Met Asp Lys Val Val Gln Ile Val
                725                 730                 735

Glu Ile Met Gln Gln Gly Ser Gln Leu Pro Cys Phe His Gly Ser Ser
            740                 745                 750

Thr Ile Arg Asn Leu Lys Glu Arg Phe His Met Ser Met Thr Glu Glu
        755                 760                 765

Gln Leu Gln Leu Leu Val Glu Gln Met Val Asp Gly Ser Met Arg Ser
    770                 775                 780

Ile Thr Thr Lys Leu Tyr Asp Gly Phe Gln Tyr Leu Thr Asn Gly Ile
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<212> PRT
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<400> 222

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Leu Leu Asp Gly Leu Val Ser Asp Tyr Ser Met Thr Pro Pro Thr Leu
            20                  25                  30

Asn Ile Thr Glu Glu Ser His Val Ile Asp Thr Gly Asp Ser Leu Ser
        35                  40                  45

Ile Ser Cys Arg Gly Gln His Pro Leu Glu Trp Ala Trp Pro Gly Ala
    50                  55                  60

Gln Glu Ala Pro Ala Thr Gly Asp Lys Asp Ser Glu Asp Thr Gly Val
65                  70                  75                  80

Val Arg Asp Cys Glu Gly Thr Asp Ala Arg Pro Tyr Cys Lys Val Leu
                85                  90                  95

Leu Leu His Glu Val His Ala Asn Asp Thr Gly Ser Tyr Val Cys Tyr
            100                 105                 110

Tyr Lys Tyr Ile Lys Ala Arg Ile Glu Gly Thr Thr Ala Ala Ser Ser
        115                 120                 125

Tyr Val Phe Val Arg Asp Phe Glu Gln Pro Phe Ile Asn Lys Pro Asp
    130                 135                 140

Thr Leu Leu Val Asn Arg Lys Asp Ala Met Trp Val Pro Cys Leu Val
145                 150                 155                 160

Ser Ile Pro Gly Leu Asn Val Thr Leu Arg Ser Gln Ser Ser Val Leu
                165                 170                 175

Trp Pro Asp Gly Gln Glu Val Val Trp Asp Asp Arg Arg Gly Met Leu
            180                 185                 190

Val Ser Thr Pro Leu Leu His Asp Ala Leu Tyr Leu Gln Cys Glu Thr
        195                 200                 205

Thr Trp Gly Asp Gln Asp Phe Leu Ser Asn Pro Phe Leu Val His Ile
    210                 215                 220

Thr Gly Asn Glu Leu Tyr Asp Ile Gln Leu Leu Pro Arg Lys Ser Leu
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Glu Leu Leu Val Gly Glu Lys Leu Val Leu Asn Cys Thr Val Trp Ala
245 250 255

Glu Phe Asn Ser Gly Val Thr Phe Asp Trp Asp Tyr Pro Gly Lys Gln
260 265 270

Ala Glu Arg Gly Lys Trp Val Pro Glu Arg Arg Ser Gln Gln Thr His
275 280 285

Thr Glu Leu Ser Ser Ile Leu Thr Ile His Asn Val Ser Gln His Asp
290 295 300

Leu Gly Ser Tyr Val Cys Lys Ala Asn Asn Gly Ile Gln Arg Phe Arg
305 310 315 320

Glu Ser Thr Glu Val Ile Val His Glu Asn Pro Phe Ile Ser Val Glu
325 330 335

Trp Leu Lys Gly Pro Ile Leu Glu Ala Thr Ala Gly Asp Glu Leu Val
340 345 350

Lys Leu Pro Val Lys Leu Ala Ala Tyr Pro Pro Pro Glu Phe Gln Trp
355 360 365

Tyr Lys Asp Gly Lys Ala Leu Ser Gly Arg His Ser Pro His Ala Leu
370 375 380

Val Leu Lys Glu Val Thr Glu Ala Ser Thr Gly Thr Tyr Thr Leu Ala
385 390 395 400

Leu Trp Asn Ser Ala Ala Gly Leu Arg Arg Asn Ile Ser Leu Glu Leu
405 410 415

Val Val Asn Val Pro Pro Gln Ile His Glu Lys Glu Ala Ser Ser Pro
420 425 430

Ser Ile Tyr Ser Arg His Ser Arg Gln Ala Leu Thr Cys Thr Ala Tyr
435 440 445

Gly Val Pro Leu Pro Leu Ser Ile Gln Trp His Trp Arg Pro Trp Thr
450 455 460

```
Pro Cys Lys Met Phe Ala Gln Arg Ser Leu Arg Arg Arg Gln Gln Gln
465                 470                 475                 480

Asp Leu Met Pro Gln Cys Arg Asp Trp Arg Ala Val Thr Thr Gln Asp
                485                 490                 495

Ala Val Asn Pro Ile Glu Ser Leu Asp Thr Trp Thr Glu Phe Val Glu
            500                 505                 510

Gly Lys Asn Lys Thr Val Ser Lys Leu Val Ile Gln Asn Ala Asn Val
        515                 520                 525

Ser Ala Met Tyr Lys Cys Val Val Ser Asn Lys Val Gly Gln Asp Glu
    530                 535                 540

Arg Leu Ile Tyr Phe Tyr Val Thr Thr Ile Pro Asp Gly Phe Thr Ile
545                 550                 555                 560

Glu Ser Lys Pro Ser Glu Glu Leu Leu Glu Gly Gln Pro Val Leu Leu
                565                 570                 575

Ser Cys Gln Ala Asp Ser Tyr Lys Tyr Glu His Leu Arg Trp Tyr Arg
            580                 585                 590

Leu Asn Leu Ser Thr Leu His Asp Ala His Gly Asn Pro Leu Leu Leu
        595                 600                 605

Asp Cys Lys Asn Val His Leu Phe Ala Thr Pro Leu Ala Ala Ser Leu
    610                 615                 620

Glu Glu Val Ala Pro Gly Ala Arg His Ala Thr Leu Ser Leu Ser Ile
625                 630                 635                 640

Pro Arg Val Ala Pro Glu His Glu Gly His Tyr Val Cys Glu Val Gln
                645                 650                 655

Asp Arg Arg Ser His Asp Lys His Cys His Lys Lys Tyr Leu Ser Val
            660                 665                 670

Gln Ala Leu Glu Ala Pro Arg Leu Thr Gln Asn Leu Thr Asp Leu Leu
        675                 680                 685
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Val Asn Val Ser Asp Ser Leu Glu Met Gln Cys Leu Val Ala Gly Ala
    690                 695                 700

His Ala Pro Ser Ile Val Trp Tyr Lys Asp Glu Arg Leu Leu Glu Glu
705                 710                 715                 720

Lys Ser Gly Val Asp Leu Ala Asp Ser Asn Gln Lys Leu Ser Ile Gln
                725                 730                 735

Arg Val Arg Glu Glu Asp Ala Gly Pro Tyr Leu Cys Ser Val Cys Arg
            740                 745                 750

Pro Lys Gly Cys Val Asn Ser Ser Ala Ser Val Ala Val Glu Gly Ser
        755                 760                 765

Glu Asp Lys Gly Ser Met Glu Ile Val Ile Leu Val Gly Thr Gly Val
    770                 775                 780

Ile Ala Val Phe Phe Trp Val Leu Leu Leu Leu Ile Phe Cys Asn Met
785                 790                 795                 800

Arg Arg Pro Ala His Ala Asp Ile Lys Thr Gly Tyr Leu Ser Ile Ile
                805                 810                 815

Met Asp Pro Gly Glu Val Pro Leu Glu Glu Gln Cys Glu Tyr Leu Ser
            820                 825                 830

Tyr Asp Ala Ser Gln Trp Glu Phe Pro Arg Glu Arg Leu His Leu Gly
        835                 840                 845

Arg Val Leu Gly Tyr Gly Ala Phe Gly Lys Val Val Glu Ala Ser Ala
    850                 855                 860

Phe Gly Ile His Lys Gly Ser Ser Cys Asp Thr Val Ala Val Lys Met
865                 870                 875                 880

Leu Lys Glu Gly Ala Thr Ala Ser Glu Gln Arg Ala Leu Met Ser Glu
                885                 890                 895

Leu Lys Ile Leu Ile His Ile Gly Asn His Leu Asn Val Val Asn Leu
            900                 905                 910
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Leu Gly Ala Cys Thr Lys Pro Gln Gly Pro Leu Met Val Ile Val Glu
        915                 920                 925

Phe Cys Lys Tyr Gly Asn Leu Ser Asn Phe Leu Arg Ala Lys Arg Asp
    930                 935                 940

Ala Phe Ser Pro Cys Ala Glu Lys Ser Pro Glu Gln Arg Gly Arg Phe
945                 950                 955                 960

Arg Ala Met Val Glu Leu Ala Arg Leu Asp Arg Arg Arg Pro Gly Ser
                965                 970                 975

Ser Asp Arg Val Leu Phe Ala Arg Phe Ser Lys Thr Glu Gly Gly Ala
            980                 985                 990

Arg Arg Ala Ser Pro Asp Gln Glu  Ala Glu Asp Leu Trp  Leu Ser Pro
        995                 1000                1005

Leu Thr  Met Glu Asp Leu Val  Cys Tyr Ser Phe Gln  Val Ala Arg
    1010                1015                1020

Gly Met  Glu Phe Leu Ala Ser  Arg Lys Cys Ile His  Arg Asp Leu
    1025                1030                1035

Ala Ala  Arg Asn Ile Leu Leu  Ser Glu Ser Asp Val  Val Lys Ile
    1040                1045                1050

Cys Asp  Phe Gly Leu Ala Arg  Asp Ile Tyr Lys Asp  Pro Asp Tyr
    1055                1060                1065

Val Arg  Lys Gly Ser Ala Arg  Leu Pro Leu Lys Trp  Met Ala Pro
    1070                1075                1080

Glu Ser  Ile Phe Asp Lys Val  Tyr Thr Thr Gln Ser  Asp Val Trp
    1085                1090                1095

Ser Phe  Gly Val Leu Leu Trp  Glu Ile Phe Ser Leu  Gly Ala Ser
    1100                1105                1110

Pro Tyr  Pro Gly Val Gln Ile  Asn Glu Glu Phe Cys  Gln Arg Val
    1115                1120                1125

Arg Asp  Gly Thr Arg Met Arg  Ala Pro Glu Leu Ala  Thr Pro Ala
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1130 1135 1140

Ile Arg His Ile Met Leu Asn Cys Trp Ser Gly Asp Pro Lys Ala
1145 1150 1155

Arg Pro Ala Phe Ser Asp Leu Val Glu Ile Leu Gly Asp Leu Leu
1160 1165 1170

Gln Gly Arg Gly Leu Gln Glu Glu Glu Glu Val Cys Met Ala Pro
1175 1180 1185

Arg Ser Ser Gln Ser Ser Glu Glu Gly Ser Phe Ser Gln Val Ser
1190 1195 1200

Thr Met Ala Leu His Ile Ala Gln Ala Asp Ala Glu Asp Ser Pro
1205 1210 1215

Pro Ser Leu Gln Arg His Ser Leu Ala Ala Arg Tyr Tyr Asn Trp
1220 1225 1230

Val Ser Phe Pro Gly Cys Leu Ala Arg Gly Ala Glu Thr Arg Gly
1235 1240 1245

Ser Ser Arg Met Lys Thr Phe Glu Glu Phe Pro Met Thr Pro Thr
1250 1255 1260

Thr Tyr Lys Gly Ser Val Asp Asn Gln Thr Asp Ser Gly Met Val
1265 1270 1275

Leu Ala Ser Glu Glu Phe Glu Gln Ile Glu Ser Arg His Arg Gln
1280 1285 1290

Glu Ser Gly Phe Arg
1295

<210> 223
<211> 3437
<212> DNA
<213> Homo sapiens

<400> 223
attgcccgga gatggccggc agagccgccg agacgccgaa gagcccgccg cccgcgcgag 60

gtgtagacgg ggcactgcct tcagagcagg tcctgccagc ctcgctggag aggatgccct 120

cgtgtccgtg atgggctgtg ggacaagcaa ggtccttccc gagccaccca aggatgtcca 180

gctggatctg gtcaagaagg tggagccctt cagtggcact aagagtgacg tgtacaagca 240

cttcatcaca gaggtggaca gtgttggccc tgtcaaagcc gggttcccag cagcaagtca 300

gtatgcacac ccctgccccg gtcccccgac tgctggccac acggagcctc cctcagaacc 360

accacgcagg gccagggtag ctaagtacag ggccaagttt gacccacgtg ttacagctaa 420

gtatgacatc aaggccctaa ttggccgagg cagcttcagc cgagtggtac gtgtagagca 480

ccgggcaacc cggcagccgt atgccatcaa gatgattgag accaagtacc gggaggggcg 540

ggaggtgtgt gagtcggagc tgcgtgtgct gcgtcgggtg cgtcatgcca acatcatcca 600

gctggtggag gtgttcgaga cacaggagcg ggtgtacatg gtgatggagc tggccactgg 660

tggagagctc tttgaccgca tcattgccaa gggctccttc accgagcgtg acgccacgcg 720

ggtgctgcag atggtgctgg atggcgtccg gtatctgcat gcactgggca tcacacaccg 780

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caccgacttc ggcctggcca gtgctcgcaa gaagggtgat gactgcttga tgaagaccac 900

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tggggagccc tggcctagtg tgtccaacct ggccaaggac ttcattgacc gcctgctgac 1140

agtggaccct ggagcccgta tgactgcact gcaggccctg aggcacccgt gggtggtgag 1200

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ctaccagcag caatacaatg gctgagccgc ctggctgtgc acacatgcag cacgacccag 1440

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gggctgccat tcattcc 3437

<210> 224

<211> 424
<212> PRT
<213> Homo sapiens

<400> 224

Met Gly Cys Gly Thr Ser Lys Val Leu Pro Glu Pro Pro Lys Asp Val
1 5 10 15

Gln Leu Asp Leu Val Lys Lys Val Glu Pro Phe Ser Gly Thr Lys Ser
20 25 30

Asp Val Tyr Lys His Phe Ile Thr Glu Val Asp Ser Val Gly Pro Val
35 40 45

Lys Ala Gly Phe Pro Ala Ala Ser Gln Tyr Ala His Pro Cys Pro Gly
50 55 60

Pro Pro Thr Ala Gly His Thr Glu Pro Pro Ser Glu Pro Pro Arg Arg
65 70 75 80

Ala Arg Val Ala Lys Tyr Arg Ala Lys Phe Asp Pro Arg Val Thr Ala
85 90 95

Lys Tyr Asp Ile Lys Ala Leu Ile Gly Arg Gly Ser Phe Ser Arg Val
100 105 110

Val Arg Val Glu His Arg Ala Thr Arg Gln Pro Tyr Ala Ile Lys Met
115 120 125

Ile Glu Thr Lys Tyr Arg Glu Gly Arg Glu Val Cys Glu Ser Glu Leu
130 135 140

Arg Val Leu Arg Arg Val Arg His Ala Asn Ile Ile Gln Leu Val Glu
145 150 155 160

Val Phe Glu Thr Gln Glu Arg Val Tyr Met Val Met Glu Leu Ala Thr
165 170 175

Gly Gly Glu Leu Phe Asp Arg Ile Ile Ala Lys Gly Ser Phe Thr Glu
180 185 190

Arg Asp Ala Thr Arg Val Leu Gln Met Val Leu Asp Gly Val Arg Tyr
195 200 205

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Leu His Ala Leu Gly Ile Thr His Arg Asp Leu Lys Pro Glu Asn Leu
    210                 215                 220

Leu Tyr Tyr His Pro Gly Thr Asp Ser Lys Ile Ile Ile Thr Asp Phe
225                 230                 235                 240

Gly Leu Ala Ser Ala Arg Lys Lys Gly Asp Asp Cys Leu Met Lys Thr
                245                 250                 255

Thr Cys Gly Thr Pro Glu Tyr Ile Ala Pro Glu Val Leu Val Arg Lys
            260                 265                 270

Pro Tyr Thr Asn Ser Val Asp Met Trp Ala Leu Gly Val Ile Ala Tyr
        275                 280                 285

Ile Leu Leu Ser Gly Thr Met Pro Phe Glu Asp Asp Asn Arg Thr Arg
    290                 295                 300

Leu Tyr Arg Gln Ile Leu Arg Gly Lys Tyr Ser Tyr Ser Gly Glu Pro
305                 310                 315                 320

Trp Pro Ser Val Ser Asn Leu Ala Lys Asp Phe Ile Asp Arg Leu Leu
                325                 330                 335

Thr Val Asp Pro Gly Ala Arg Met Thr Ala Leu Gln Ala Leu Arg His
            340                 345                 350

Pro Trp Val Val Ser Met Ala Ala Ser Ser Ser Met Lys Asn Leu His
        355                 360                 365

Arg Ser Ile Ser Gln Asn Leu Leu Lys Arg Ala Ser Ser Arg Cys Gln
    370                 375                 380

Ser Thr Lys Ser Ala Gln Ser Thr Arg Ser Ser Arg Ser Thr Arg Ser
385                 390                 395                 400

Asn Lys Ser Arg Arg Val Arg Glu Arg Glu Leu Arg Glu Leu Asn Leu
                405                 410                 415

Arg Tyr Gln Gln Gln Tyr Asn Gly
            420
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<211> 411
<212> DNA
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<400> 225
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acgcaggcac tggagcaggt gacaaaagtg ctggaggact tcgtggatgg agaccacgtc 180

atcctgcaaa agtacgtggc atgcctagaa gaacttcgtg aagctctgga gatctccccc 240

ttcttcaaga cccacgaggt ggtaggcagc tccctcctct tcgtgcacga ccacaccggc 300

ctggccaagg tctggatgat agacttcggc aagacggtgg ccttgcccga ccaccagacg 360

ctcagccaca ggctgccctg ggctgagggc aaccgtgagg acggctacct c 411

<210> 226
<211> 137
<212> PRT
<213> Homo sapiens

<400> 226

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Thr Ser Thr Leu Gly Phe Arg Ile Glu Gly Ile Lys Lys Ala Asp Gly
20 25 30

Thr Cys Asn Thr Asn Phe Lys Lys Thr Gln Ala Leu Glu Gln Val Thr
35 40 45

Lys Val Leu Glu Asp Phe Val Asp Gly Asp His Val Ile Leu Gln Lys
50 55 60

Tyr Val Ala Cys Leu Glu Glu Leu Arg Glu Ala Leu Glu Ile Ser Pro
65 70 75 80

Phe Phe Lys Thr His Glu Val Val Gly Ser Ser Leu Leu Phe Val His
85 90 95

Asp His Thr Gly Leu Ala Lys Val Trp Met Ile Asp Phe Gly Lys Thr
100 105 110

Val Ala Leu Pro Asp His Gln Thr Leu Ser His Arg Leu Pro Trp Ala

115 120 125

Glu Gly Asn Arg Glu Asp Gly Tyr Leu
130 135